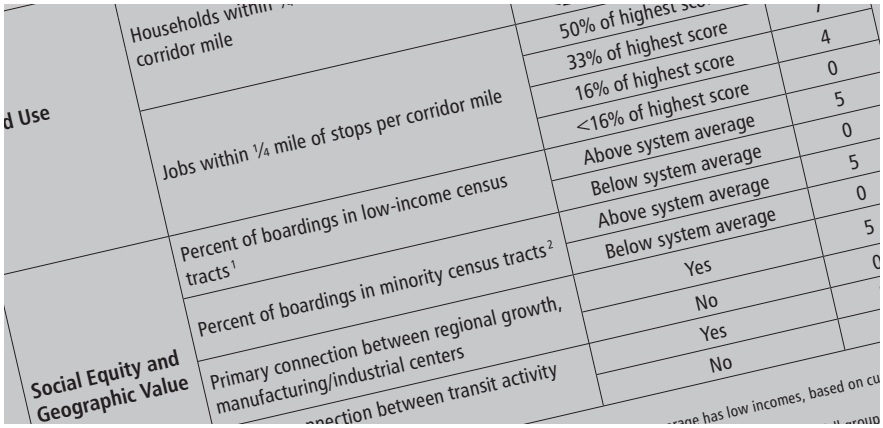
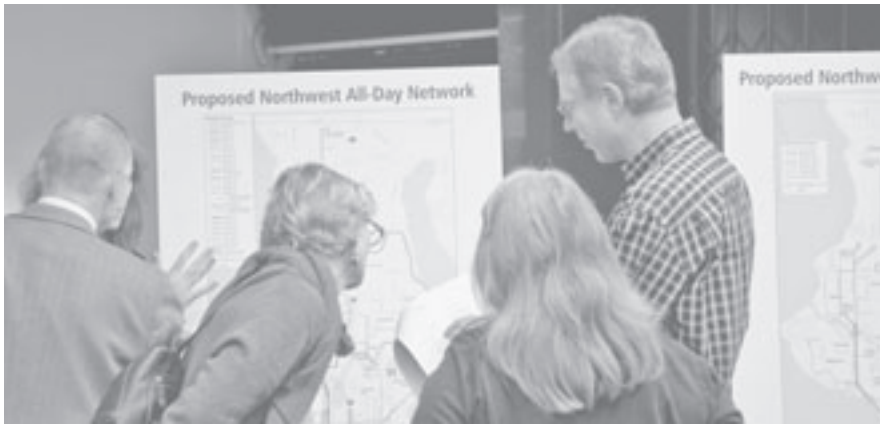


d Use	Households within ¼ mile of corridor mile	50% of highest score	7
		33% of highest score	4
		16% of highest score	0
	Jobs within ¼ mile of stops per corridor mile	<16% of highest score	5
		Above system average	0
	Percent of boardings in low-income census tracts[1]	Below system average	5
Social Equity and Geographic Value		Above system average	0
	Percent of boardings in minority census tracts[2]	Below system average	5
	Primary connection between regional growth, manufacturing/industrial centers	Yes	0
		No	
	nection between transit activity	Yes	
		No	



King County
METRO
We'll Get You There

King County Metro Transit
2011 Service Guidelines Report

March 2012
Amended June 27, 2012

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King County Metro Transit
2011 Service Guidelines Report

March 2012

Amended June 27, 2012

King County METRO

We'll Get You There

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EXECUTIVE SUMMARY

The King County Council adopted Metro Transit's service guidelines as part of our new *Strategic Plan for Public Transportation* in July 2011. The plan and guidelines are consistent with the recommendations of the Regional Transit Task Force. The guidelines help us plan and manage the transit system, and enable the public to see the basis of our proposals to expand, reduce or revise service.

The guidelines are designed to help us use tax and fare dollars as effectively as possible to provide high-quality service that gets people where they want to go. The guidelines strike a balance between productivity, social equity and geographic value. They help us make sure we serve areas that have many low-income and minority residents and others who may depend on transit (social equity), and that we respond to public transportation needs throughout the county (geographic value).

Metro prepared this *2011 Service Guidelines Report* to comply with Section 5 of King County Ordinance 17143, which adopted the service guidelines. As the first annual guidelines report, this report contains the results of our 2011 assessment and will serve as the baseline for future analyses. This report does not recommend specific service changes; rather, it provides the information that is the foundation for service planning. This report replaces and expands on Metro's annual route performance report.

The analysis

A foundation for our guidelines analysis is the All-Day and Peak Network, made up of major transit corridors in King County that connect designated regional growth centers, manufacturing/industrial centers and other areas of concentrated activity. We set target service levels for the 113 all-day corridors in the All-Day and Peak Network based on objective criteria that reflect productivity, social equity and geographic value. We measured how close Metro's actual service comes to matching the targets, and designated each corridor as adequately served, underserved, or overserved.

We also assessed the performance of 244 bus routes, using two different ways of measuring productivity. Comparing the performance of similar routes and times of day, we identified those in the bottom 25 percent, in the middle group from 25 to 75 percent, and in the top 25 percent performance level. We also examined the quality of service on each route by finding how often the buses are overcrowded or late.

The guidelines and service changes

This analysis of transit corridors and individual routes points to areas where we could improve the transit system. It identifies corridors and routes where the investment of more service hours is needed to improve service quality. It also identifies potential opportunities to adjust routes to improve performance or re-allocate investments from lower performing services to areas where needs are more pressing.

We use this analysis to identify potential opportunities for improvement and to inform the service planning process. This report does not recommend specific service changes or mandate a course of actions. Service change proposals are developed through a multilateral process that takes into account many factors. We look at how the network serves our customers and consider the tradeoffs that result from changing service. Public input is critically important as well; Metro conducts extensive public outreach around major service changes, sharing initial ideas and modifying them in response to what we hear. Proposed major changes must be approved by the County Council, and policy makers also consider public input and the broad implications of changes in transit service.

Highlights of the results

The following is a summary of our major findings:

1. **Assessment of service adequacy.** Our service adequacy analysis found that 99 of the 113 all-day corridors have adequate service in one or more periods of the day (peak, off-peak or night), 49 corridors are underserved in one or more periods of the day, and 29 corridors have a higher level of service than is warranted in at least one time period.

2. **Investment priorities**. The guidelines identify routes that have low-quality service—regularly overcrowded or behind schedule—and underserved corridors as the highest priority candidates for investments. A total of nearly 400,000 annual service hours would be required to reduce overcrowding, improve on-time performance, and meet unmet target service levels on corridors. The system's largest need for investment or reallocation of service hours is in corridors that are currently underserved during at least one time period.

3. **Opportunities to improve efficiency and effectiveness.** Of the 244 bus routes[1] examined, 65 routes are in the bottom 25 percent on both performance measures in at least one time period. Of these 65 routes, 39 serve the Seattle core and 26 do not serve the Seattle core. Four routes that serve the Seattle core and nine that do not serve the Seattle core are in the bottom 25 percent on both measures in multiple time periods.

   Routes that are low performers are identified for further review. In some cases, these routes might be candidates for reduction or revision. In other cases, they might be retained because they provide an important connection within the network. We may consider alternatives to improve a route's performance. In some instances, Metro may identify alternative service delivery strategies to meet the mobility needs of communities that are served by low-performing routes. These strategies could include dial-a-ride-transit as an alternative to existing fixed-route service, or other services such as ridesharing, community vans, or Community Access Transportation. The guidelines indicate that we must maintain a fixed-route or alternative service in urban areas adjacent to rural areas when such service is the only Metro route available, regardless of its performance.

The guidelines at work: 2011 service changes

While the guidelines were still being developed, we used the concepts in them as we planned a major restructure of Metro's Eastside transit service that took effect in fall 2011. Our planning was based on analysis of corridors and routes, consideration of social equity and geographic value, and input gathered through an extensive public outreach project.

The restructure added frequent all-day service—including the new RapidRide B Line—between key centers, increased service to meet target levels, reduced duplicative services, revised and reduced services that had low productivity, and reallocated service hours to improve service quality on several routes. We made these changes with the expectation of attracting more riders, improving productivity, connecting major centers on the Eastside and around the county, and advancing social equity by serving people who depend on transit.

1 Includes route parts as separate routes – for example, the northern portion of Route 3 (3 N) is analyzed separately from the southern portion of Route 3 (3S)

INTRODUCTION

King County Metro Transit prepared this *2011 Service Guidelines Report* to comply with Section 5 of King County Ordinance 17143, which adopted Metro's service guidelines. The required contents are at right.

As the first annual guidelines report, this one establishes baseline data for future reports (although data collection may change somewhat after the downtown Seattle Ride Free Area is eliminated in fall 2012, resulting in systemwide operational changes).

Annual service guidelines report requirements

- Corridors in the All-Day and Peak Network, scores and assigned service levels
- Over- and under-served corridors and estimated number of hours needed to meet needs
- Route performance, changes in thresholds for productivity, lateness and overcrowding measures
- List of service changes made since last report
- Network and rider connectivity delivered by other providers
- Potential changes to Metro's strategic plan and service guidelines

The service guidelines

Relevant service guidelines are summarized throughout the report. To read the complete guidelines, visit http://metro.kingcounty.gov/planning and select the "Service Guidelines" tab, or use this direct link to a PDF file: http://metro.kingcounty.gov/planning/pdf/KCMT_ServiceGuidelines_07-11-11.pdf

Corridors and routes

This report discusses both corridors and routes. It is important to understand these terms.

Corridors are major transit pathways that connect regional growth, manufacturing/industrial, and activity centers; serve park-and-rides and transit hubs; and provide mobility throughout King County. The service guidelines evaluate 113 major all-day transit corridors in King County that form the basis of Metro's All-Day and Peak Network.

Some Metro routes do not travel on the All-Day and Peak Network. These routes generally circulate within a local area or provide custom service for a school or other institution.

Bus routes are the actual services provided. Service within a single corridor might be provided by multiple bus routes. For example, the corridor from Fremont to downtown Seattle via Dexter Avenue North combines segments of two different bus routes, 26 and 28, and both of these routes extend beyond Fremont.

Some routes might cover multiple corridors. For example, the Route 271 serves three distinct travel markets: Issaquah-Eastgate, Eastgate-Bellevue, and Bellevue-University District. Metro identified each of these segments as a separate corridor to enable analysis of the different travel markets served by a single route.

Information sources

This report is based on ridership and reliability information gathered by computers on Metro buses. The automated vehicle location (AVL) system installed on all Metro buses gathers data about bus locations that we use to track on-time performance. An automatic passenger counter (APC) system, installed on about 15 percent of Metro's buses, provides us with ridership data. (See inset box on next page for more information).

For this report, we used ridership and service information from the spring 2011 service change, between February 5 and June 10, 2011. This is the most recent full spring service change for which we had final information. We typically use either spring or fall information because summer data includes seasonal service cuts that occur in the summer, related to the University of Washington schedule. It takes several weeks following the end of a service change to finalize ridership information, and additional time to analyze the information by route. Fall 2011 data was not available at the time this report was compiled because the service change ended February 17, 2012, during the time this report was being prepared.

Metro at a glance

Metro offers a broad range of public transportation services across King County. The focus of this report is Metro's large network of bus and trolley routes. A growing part of this network is RapidRide bus rapid transit service. Metro launched its first RapidRide line, the A Line, in fall 2010. The B Line followed in 2011, and four more lines will be in operation by fall 2013. Metro also operates the South Lake Union Streetcar. Altogether Metro's fixed-route services provided about 112.8 million passenger trips in 2011. This is a 2.9 percent increase over our 2010 ridership of 109.6 million.

In addition to these routes, Metro provides the following services:

- Dial-a-ride transit (DART), which provided about 827,000 passenger trips in 2011, and other alternative services that are more cost-effective than fixed-route service in meeting local needs.
- Door-to-door paratransit service for people with disabilities who cannot use regular bus service. Metro's Access van service and taxi scrip programs combined provided more than 1.2 million passenger trips in 2011.
- Ride-sharing programs, including 1,200 commuter vanpools that accounted for approximately 3.1 million passenger trips in 2011. Metro also hosts an online ridematch service for people who want to form or join carpools.

Ridership and reliability data sources: AVL and APC

The automated vehicle location (AVL) system installed on all Metro buses gathers data about bus locations that we use to track on-time performance.

An automatic passenger counter (APC) system is installed on about 15 percent of Metro's buses. It provides information about the number of riders, boardings and exits, passenger miles, and the number of passengers on board. Buses equipped with APCs are randomly assigned to trips, with a goal of getting at least three observations during each service-change period. Occasionally, some trips have few or no APC observations, so we estimate ridership. In this report we have noted where data was estimated. Ridership for DART service is collected using driver count cards.

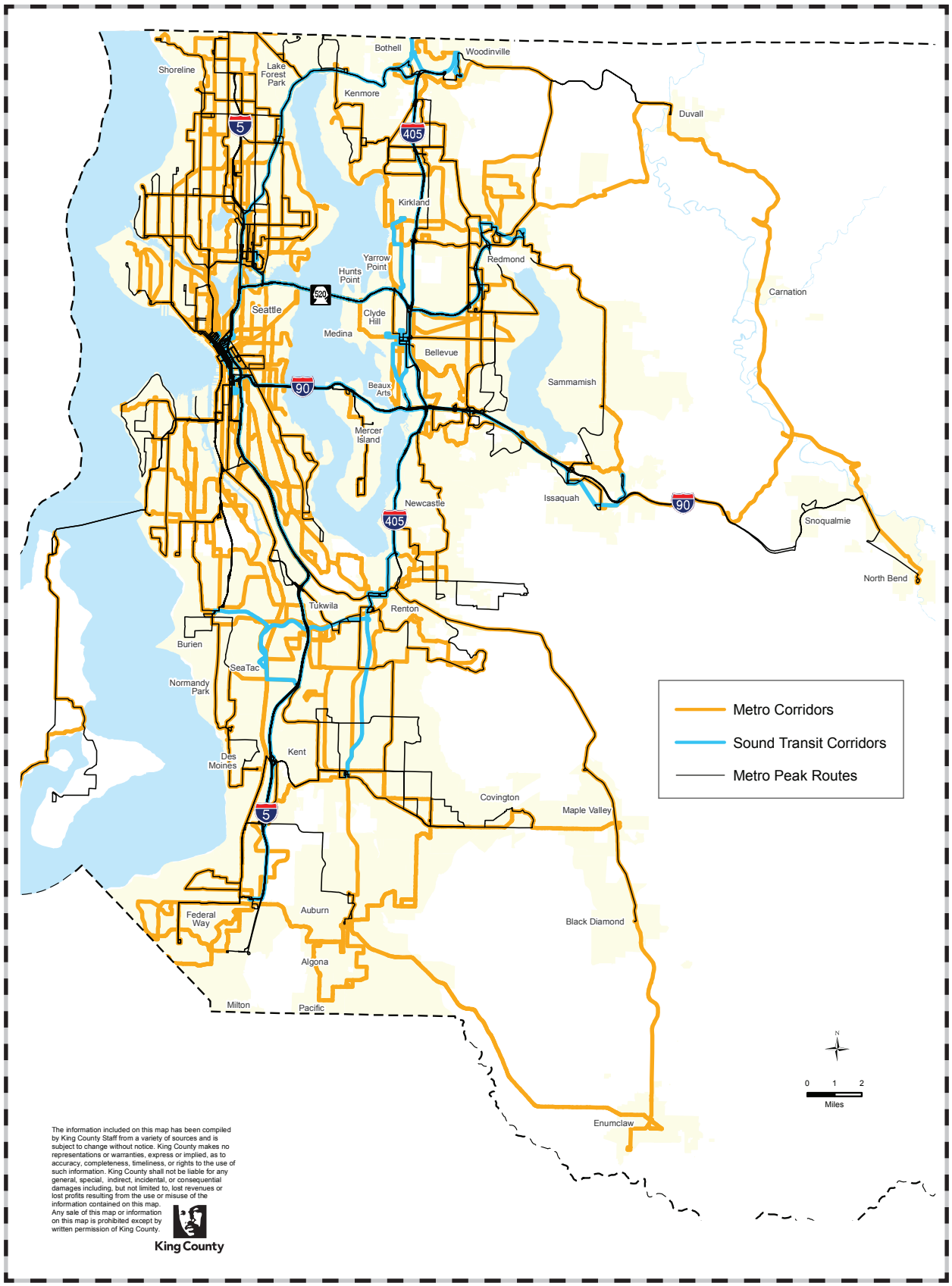
Metro is installing new on-board systems (OBS) on all Metro buses. OBS tracks bus locations using GPS-technology and, like AVL, will provide data on schedule adherence. About 15 to 20 percent of Metro's buses will be equipped with new APC units, so ridership data will continue to be based on samples. During the transition to OBS, more trips than usual may have few or no observations.

Metro's overall ridership for all fixed-route, DART, paratransit and vanpool services in 2011 was 117 million passenger trips—a 3 percent increase from the 113.7 million trips provided in 2010.

Metro also operates Sound Transit's Express buses and Link light rail in King County as well. We do not analyze these services using our service guidelines; Sound Transit has its own process of planning and managing services. Coordination between Metro and Sound Transit is important, though, and we describe how we provide complementary services in the report.

FIG. 1

All-Day and Peak Network, Spring 2011



A balanced system: social equity and geographic value in the guidelines

Metro strives to provide a transit system that contributes to equitable access to transportation for everyone in our community and that delivers value throughout King County. The service guidelines help us by incorporating processes and criteria that focus on social equity and geographic value.

One of the most important processes defined in the guidelines is that of setting target service levels for the All-Day and Peak Network. Measures of social equity and geographic value each account for 25 percent of each corridor's total service-level score in this process. Productivity factors based on land use comprise the remaining 50 percent. These factors consider how many people live and work near transit corridors. Corridors that score well on social equity and geographic value factors will be targeted for at least an all-day service level of 30-minute frequency.

In the guidelines-based analysis conducted in 2011, three corridors were targeted for Very Frequent Service and 10 corridors for Frequent service despite receiving no points for land use. More detail about corridor scoring and the results of the 2011 assessment follow.

Social equity

In our work to plan a transit system that gives King County residents equitable transportation opportunities, we consider how our system serves historically disadvantaged populations. Using the guidelines, we identify areas where many low-income or minority people live, and target higher levels of services in those areas. Specifically, we look at transit boardings in census tracts where the percentage of low-income or minority residents is higher than the county average. Our 2011 analysis identified 61 low-income and 61 minority corridors. Forty-two of the corridors are both low-income and minority.

Our investment priorities also benefit low-income and minority corridors. The guidelines place a high priority on reducing overcrowding and improving schedule reliability. The investment of service hours needed to address overcrowding and poor on-time performance systemwide and in low-income and minority routes and corridors is presented in the table below.

Priority investment category	Estimated total hours	Hours on minority routes/corridors	%	Hours on low-income routes/ corridors	%
Passenger loads	7,700	5,600	73%	4,900	64%
Schedule reliability	32,500	13,200	41%	16,900	52%
Underserved corridors	349,000	244,000	70%	213,000	61%

Source: Spring 2011 APC

We also consider historically disadvantaged populations and people who depend on transit when we develop proposals to add, reduce or revise service to make the transit system more productive and effective. We strive to maintain appropriate levels of service based on established service targets. Even when reducing low-performing service, we avoid making reductions on underserved corridors.

When we plan significant service changes, we conduct a robust public outreach process and strive for meaningful engagement of people who have low incomes or are members of minority groups, including those who speak little or no English. Our efforts include developing partnerships with community

organizations, having public open houses and information tables at convenient times and locations, translating public communication materials, and offering interpreters at meetings.

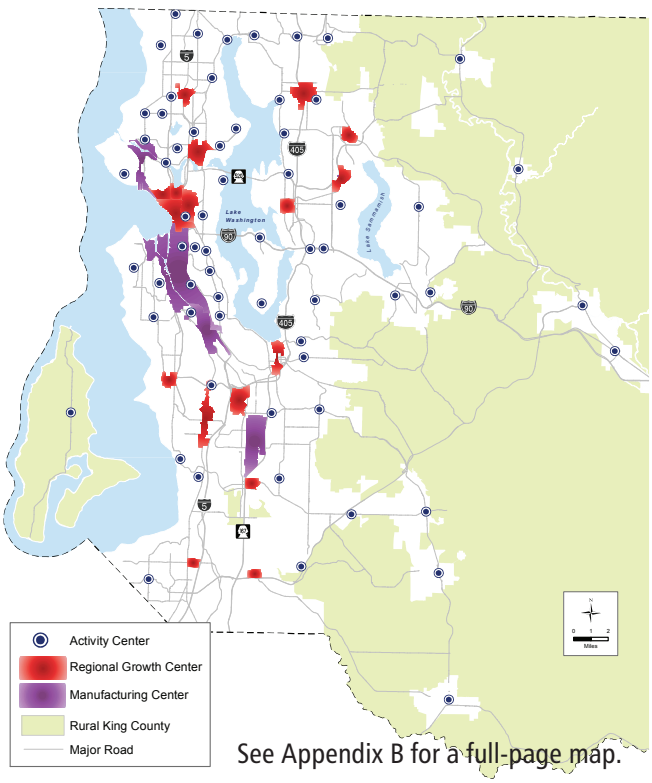
We follow the requirements and guidance of Title VI of the Civil Rights Act, which prohibits discrimination on the basis of race, color or national origin; King County Ordinance 16948, related to the "fair and just" principle of the King County Strategic Plan, which strives to eliminate inequities and social injustices based on race, income, and neighborhood; and the Executive Order on Translation, which requires all county agencies to ensure that public communications are culturally and linguistically appropriate for the target audience, including people who do not speak English well.

For example, Ordinance 16948 includes 13 "determinants of equity." When planning service changes we ensure that the revised services will continue to provide public transportation connections and access to health, education, food, housing, employment and other activities of daily living and civic engagement.

Geographic value

To help us deliver value throughout the county's geographic area, the guidelines identify the primary transit connections between centers on the basis of ridership and travel time. Centers are activity nodes that are the basis of the countywide transit network. They include regional growth centers, manufacturing/industrial centers, and transit activity centers. Transit activity centers include major destinations and transit attractions such as large employment sites and health and social service facilities.

Transit Activity Centers



See Appendix B for a full-page map.

Through the corridor scoring process, we assign higher target service levels to corridors that serve as primary connections between centers.

Primary connections	Number of corridors
Primary connections between regional centers	29
Primary connection between activity centers	47

The guidelines also incorporate geographic value by classifying routes by market served. This classification allows us to compare similar routes when assessing productivity. We classify our routes into two groups:

- Seattle core routes, which serve the greater downtown Seattle area and the University District.
- Non-Seattle core routes, which operate in other areas of Seattle and King County.

Routes that serve the Seattle core are expected to perform at a higher level because their market potential is greater than routes serving other parts of King County.

SECTION 1

CORRIDOR ANALYSIS

We use the service guidelines to evaluate the All-Day and Peak Network and establish target service levels for transit corridors throughout King County. The guidelines use factors of productivity, social equity and geographic value. Our analysis also assesses how well we are achieving the service level targets.

The analysis process

Target service levels are set through a three-step process outlined in the service guidelines. Step one assigns a preliminary level of service based on how many households or jobs are nearby, how many riders board buses in areas with relatively large low-income or minority populations, and how the corridors connect to transit activity centers and the type of centers those are.

Step two compares the actual number of transit riders with the level recommended in step one, and increases the service level if necessary to accommodate existing riders.

Step three determines if peak-period service is appropriate. The guidelines say peak service is warranted if it has higher ridership and provides a faster connection than all-day service alternatives.

All-Day and Peak Network Assessment Process

STEP ONE: SET SERVICE LEVELS	
Factor	**Purpose**
Land Use	Support areas of higher employment and household density (50%)
Social Equity and Geographic Value	Serve historically disadvantaged communities (25%)
	Provide appropriate service levels throughout King County (25%)

STEP TWO: ADJUST SERVICE LEVELS	
Factor	**Purpose**
Loads	Provide sufficient capacity for existing transit demand
Use	Improve effectiveness and financial stability of transit service
Service Span	Provide adequate levels of service throughout the day

STEP THREE: IDENTIFY PEAK OVERLAY	
Factor	**Purpose**
Travel Time	Ensure that peak service provides a travel time advantage compared to other service alternatives
Ridership	Ensure that peak service is highly used

OUTCOME: ALL-DAY AND PEAK NETWORK

After identifying target service levels, we assign each corridor a service family. Service families are defined by frequency and hours of service. Frequency is the number of minutes between consecutive trips in the same direction. Hours of service, or span, is the time between the first trip and the last trip leaving the terminal in the predominant direction of travel.

The service families are:

- **Very frequent** – the highest level of all-day service, generally serving very large employment and transit activity centers and high-density residential areas.
- **Frequent** – a high level of all-day service, generally serving major employment and transit activity centers and high-density residential areas.
- **Local** – a moderate level of all-day service, generally serving regional growth centers and low- to medium-density residential areas.
- **Hourly** – all-day service no more frequent than every hour, generally connecting low-density residential areas to regional growth centers.
- **Peak** – specialized service in the periods of highest demand, generally connecting to a major employment center in the morning and away from the center in the afternoon.

Setting target service levels: the role of social equity and geographic value

Target service levels are set using an approach that balances multiple factors. To illustrate, some corridors that have low density and score poorly on land use measures still warrant high levels of service because they score highly on geographic value and social equity measures. For example, corridor 3 between Auburn and Burien gets zero points for land use. However, it is a highly used corridor that gets the maximum number of possible points for geographic value and social equity and is identified as a frequent-service corridor as a result.

Corridors 55 between Lake City, Northgate, and downtown Seattle and 106 between Bellevue and the University District are additional examples of corridors targeted for very frequent service that did not score well on land use. Each of these corridors gets only four points out of 20 possible points for land use measures but get the maximum score on geographic value and social equity.

Summary of Typical Service Levels by Family

Service family	Frequency (minutes)			Days of service	Hours of service
	Peak[1]	Off-peak	Night		
Very frequent	15 or better	15 or better	30 or better	7 days	16-20 hours
Frequent	15 or better	30	30	7 days	16-20 hours
Local	30	30 - 60	--[2]	5-7 days	12-16 hours
Hourly	60 or worse	60 or worse	--	5 days	8-12 hours
Peak	8 trips/day minimum	--	--	5 days	Peak

1 Peak periods are 5-9 a.m. and 3-7 p.m. weekdays; off-peak are 9 a.m. to 3 p.m. weekdays and 5 a.m. to 7 p.m. weekends; night is 7 p.m. to 5 a.m. all days

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

In addition to the service families described above, Metro provides alternative services such as ridesharing, community vans, and Community Access Transportation. These alternative services provide mobility in flexible ways and complement the network of Metro corridors. (Dial-a-ride transit, DART, is included in Metro's regular service families.)

The next step is to compare the target service level to the existing service level to determine whether a corridor is underserved, overserved, or adequately served in the peak, off-peak and night time periods.

RESULTS

Service levels and families

Our analysis of the 113 all-day corridors found that 63 corridors are targeted for Very Frequent or Frequent service, 35 are targeted for Local service, and 15 corridors are classified as Hourly. The table below shows the hours and rides on services that are currently operating on corridors assigned to a given service family.

Hours and Rides of Routes on All-Day and Peak Network by Service Family (Spring 2011)

		Estimated hours[1]		Estimated rides[2]	
Service family	**Number of corridors in family**	**Service hours in family**	**% of Total[3]**	**Total**	**% of Total[3]**
Very Frequent	35	1,473,000	42%	64,135,000	54%
Frequent	28	613,000	18%	21,051,000	18%
Local	35	547,000	16%	12,825,000	11%
Hourly	15	175,000	5%	4,248,000	4%
Peak Services					
Peak routes[4]		491,000	14%	10,869,000	9%

[1] Estimates of hours are based on annualized spring 2011 hours.
[2] Ridership estimates are based on annualized spring 2011 ridership data.
[3] Total ridership includes rides on all services evaluated in the route analysis. Some of those services do not travel in corridors evaluated as part of the corridor analysis, and are not included in the service family categories. The hours and rides of these services are not shown here, so percentages will not total 100. These estimates are based on spring data and will not precisely match our year-end NTD report which includes Metro services that are not included in the guidelines analysis.
[4] Three corridors are served only by peak-only routes. The hours and rides shown here duplicate approximately 13,000 hours and 332,000 rides that are reported in the service families.

Balancing productivity, social equity and geographic value

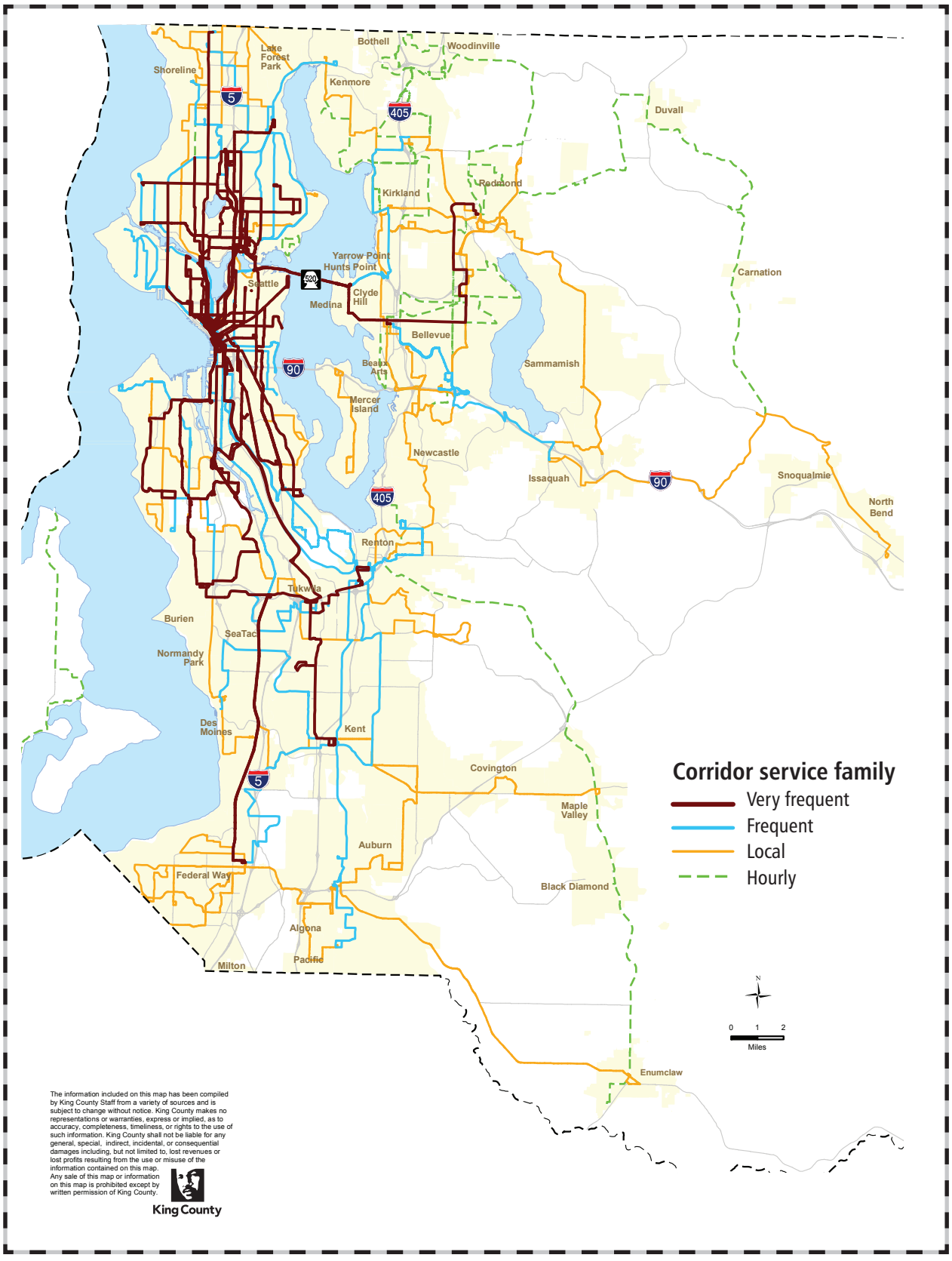
A comparison of the hours and riders served by different service families illustrates how the guidelines lead to a balance of productivity, social equity, and geographic value:

- Metro's significant investment in services in Very Frequent corridors reflects our commitment to high levels of service. Service in Very Frequent corridors is generally more productive, with a larger percentage of riders than hours. Many of the Very Frequent corridors serve areas with high concentrations of low-income and minority populations.
- Services assigned to the Local and Hourly corridors together represent 21 percent of Metro's hours and 15 percent of the system's riders. The guidelines recognize the value of providing connections in these corridors even though their ridership may not be as high. They provide important access to the system for transit-reliant populations and smaller, less densely developed urban areas.
- Peak routes have approximately 5 percent fewer system riders compared to system hours. The guidelines assess the value of peak-period trips by counting the number of riders boarding per hour, as well as by looking at travel-time advantages of peak service and the number of passenger-miles traveled. Peak services also play an important role in conveniently connecting people to employment centers.

The Spring 2011 Corridor Analysis table at the end of this section shows the assigned service family for each corridor. For actual corridor scores, see the appendix.

FIG. 2

Corridors by Service Family, Spring 2011

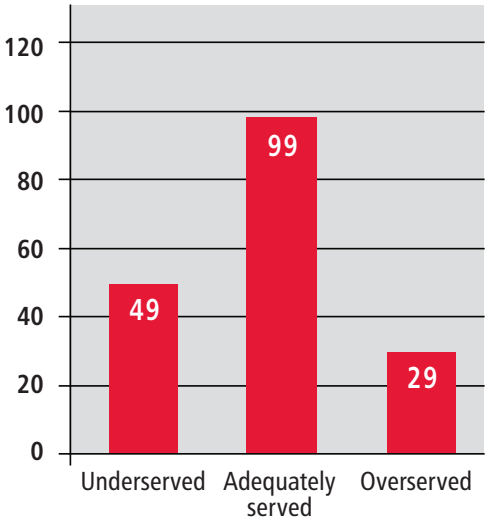


Underserved and overserved corridors

Our service adequacy analysis found that 99 of the 113 all-day corridors have adequate service in one or more periods of the day (peak, off-peak or night), 49 corridors are underserved in one or more period of the day, and 29 corridors have a higher level of service than is warranted in at least one time period.

Corridors are assessed in multiple time periods, so the sum of the number of corridors per category will be greater than the total number of corridors in the network. Maps showing the under- and overserved corridors are on the pages following the table.

Service Adequacy Analysis: Number of Corridors With at Least One Period in Category, 2011



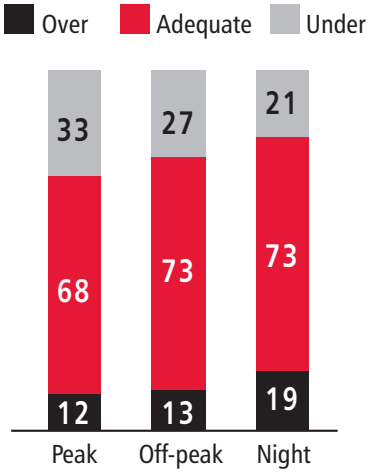
A major investment of about 349,000 annual service hours would be required to bring service levels up to the target levels for all corridors in all time periods.

The bottom chart at left shows that there were slightly more underserved corridors during the peak period, reflecting the county's peak period needs.

Investment priority

The table on the next page lists the corridors identified as underserved in the service adequacy analysis. Underserved corridors are among the higher priorities for investment of additional service. Priority among underserved corridors is established by ordering the underserved corridors in descending order of points, first by the geographic value score, then by the land-use score, and finally by the social equity score. This helps ensure that service enhancements are equitably distributed and productive.

Adequacy of Service by Service Type for Corridors, 2011



2011 Underserved Corridors and Estimated Hours to Meet Service Level Targets Ordered by Investment Priority

This table is ordered by priority investment. Priority among underserved corridors is established by ordering the underserved corridors in descending order of points, first by the geographic value score, then by the land-use score, and finally by the social equity score.

Corridor number	Between	And	Major route	Estimated hours to meet target
25	Cowen Park	Downtown Seattle	73 TB EX	4,000
19	Burien	Downtown Seattle	132 TB	18,000
20	Capitol Hill	White Center	60	11,000
55	Lake City	Downtown Seattle	41	2,000
106	U. District	Bellevue	271	5,000
99	Tukwila	Downtown Seattle	124	4,000
9	Ballard	Lake City	75	10,000
15	Bellevue	Redmond	B	23,000
3	Auburn	Burien	180	10,000
83	Renton	Burien	140	8,000
33	Federal Way	Kent	183	10,000
52	Kent	Renton	153	10,000
100	Tukwila	Des Moines	156	12,000
50	Kent	Renton	169	6,000
81	Redmond	Totem Lake	930	7,000
59	Madison Park	Downtown Seattle	11	11,000
35	Fremont	U. District	30/31	2,000
69	Northgate	Downtown Seattle	16	8,000
5	Aurora Village	Downtown Seattle	358	7,000
111	West Seattle	Downtown Seattle	54	19,000
94	Shoreline CC	Northgate	345	5,000
18	Burien	Downtown Seattle	131 TB	12,000
87	Renton	Renton Highlands	105	2,000
112	White Center	Downtown Seattle	125	3,000
95	Shoreline CC	Lake City	330	4,000
48	Kent	Burien	131/166	4,000
37	Green River CC	Kent	164	1,000
41	Issaquah	Overlake	269	11,000
30	Enumclaw	Auburn	186	5,000
101	Tukwila	Fairwood	155	5,000
42	Issaquah	North Bend	209	3,000
76	Queen Anne	Downtown Seattle	3 N	3,000
24	Colman Park	Downtown Seattle	27	3,000
26	Discovery Park	Downtown Seattle	33	9,000
107	U. District	Downtown Seattle	25	3,000
12	Ballard	Downtown Seattle	17	7,000
2	Alki	Downtown Seattle	56	4,000
71	Othello Station	Columbia City	39	5,000
79	Rainier Beach	Capitol Hill	9	9,000
110	Wedgwood	Cowen Park	71	6,000
45	Kenmore	U. District	372	4,000
70	Northgate	U. District	68	10,000
40	Issaquah	Eastgate	271	4,000
67	NE Tacoma	Federal Way	182	3,000
103	Twin Lakes	Federal Way	187	2,000
89	Renton Highlands	Renton	908	4,000
28	Eastgate	Bellevue	246	5,000
74	Pacific	Auburn	917	4,000
93	Shoreline	U. District	373	22,000
			Total	**349,000**

FIG. 3

Underserved Corridors, Spring 2011

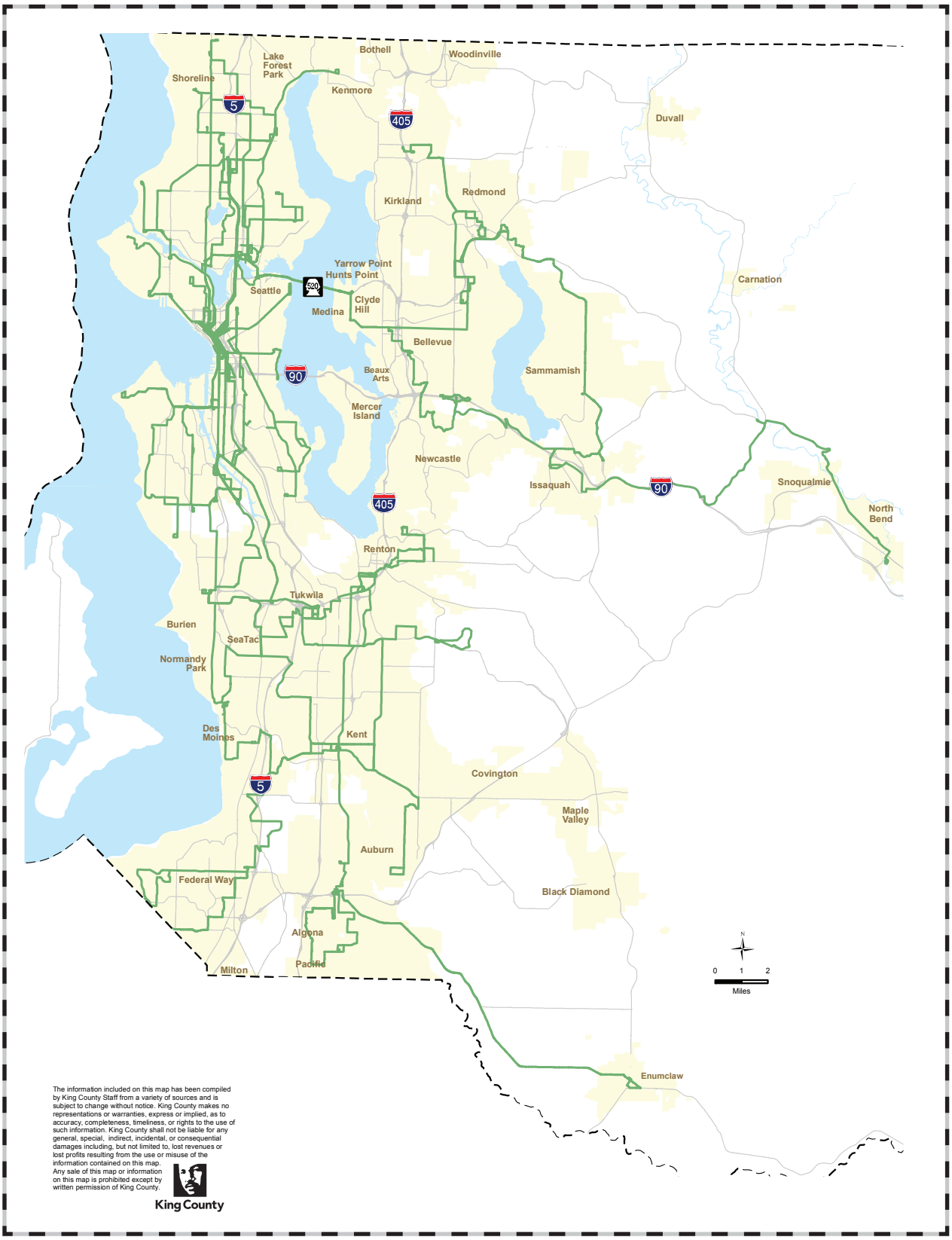
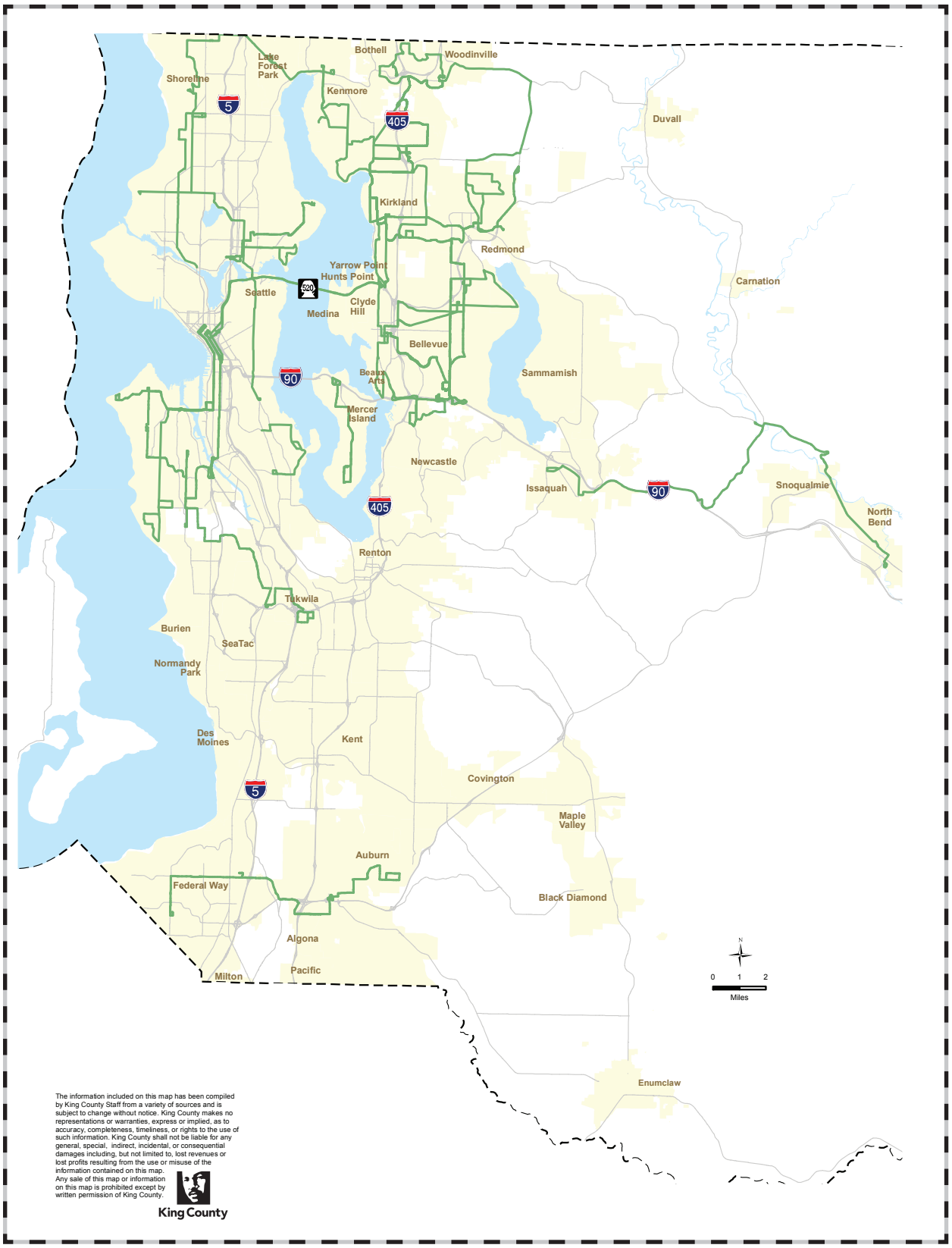


FIG. 4

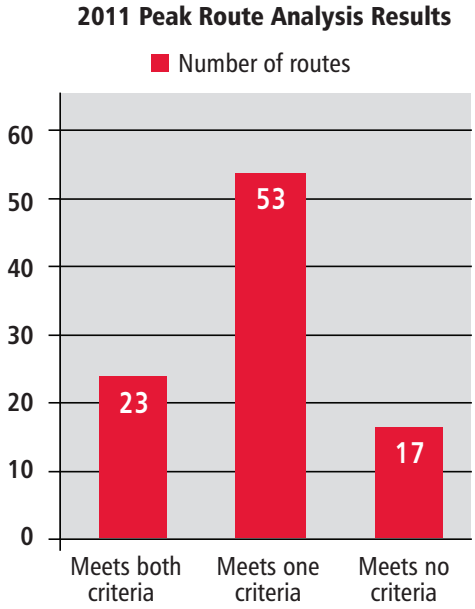
Overserved Corridors, Spring 2011



Peak routes

Metro's peak-only network has about 491,000 annual service hours, or 14 percent of the total service on the All-Day and Peak Network. This is a substantial service investment that connects much of the county directly with the largest employment centers, including the University District, Redmond, Bellevue, and downtown Seattle. Most of these connections complement all-day services that may be overcrowded during the peak period, stop more frequently than the peak service, or require transfers.

Some peak-only routes represent the only service in a given corridor or community. In some cases, hours of service may be extended based on use, demand or additional development. The guidelines assume that the primary reasons for peak-only service are capacity and speed. Accordingly, the guidelines analysis compares rides per trip on peak routes to those on the local alternative, and the peak route's travel time advantage over the local alternative. Either of these measures may be a sufficient reason to operate a peak-only service, and a peak route that achieves advantages on both measures provides even more value.



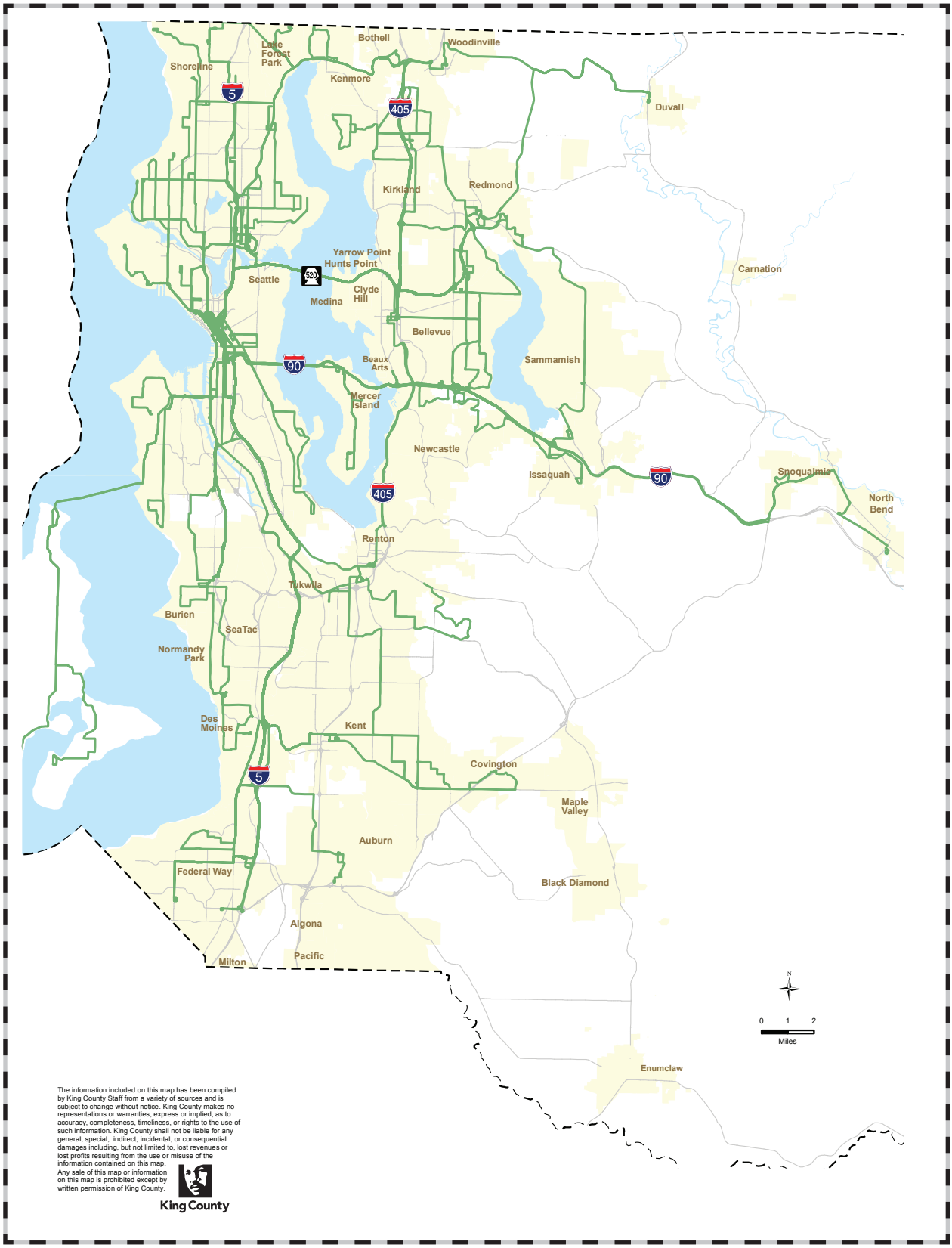
By using two criteria, the guidelines help us identify areas of potential improvement. Where a peak service does not meet one of the two criteria we can consider changes such as adjusting stop spacing or routing to improve the speed, directness, or attractiveness of a peak route.

The guidelines analysis found that the majority of Metro's peak-only services meet one or more of the peak criteria. Peak routes that meet only one of the criteria are providing valuable service, but may present opportunities for improvement.

The chart at left summarizes the results of the peak-route analysis. The list of routes not meeting one or both criteria is in the appendix.

FIG. 5

Peak Routes that Meet None or One Criteria, Spring 2011



The complete network: integration with Sound Transit

The 113 corridors in Metro's All-Day Network do not include corridors where Sound Transit is the primary provider of all-day service. Key corridors in King County where Sound Transit is the primary provider of two-way, all-day transit service are listed in the table below. Metro operates service within many of these corridors, but these are mainly peak services that complement Sound Transit's all-day service.

Corridors Served Primarily by Sound Transit

Between	And	Via	Major Route
Woodinville	Downtown Seattle	Bothell, Kenmore, Lake Forest Park, Lake City	522
UW Bothell	CCC-Bellevue	Totem Lake	535
Redmond	Downtown Seattle	Overlake	545
Bellevue	Downtown Seattle	Mercer Island	550
Issaquah	Downtown Seattle	Eastgate, Mercer Island	554
Burien	Bellevue	SeaTac, Renton	560
Auburn	Overlake	Kent, Renton, Bellevue	566
SeaTac	Federal Way	I-5	574
Federal Way	Downtown Seattle	I-5	577/578
SeaTac	Downtown Seattle	Rainier Valley	Link light rail

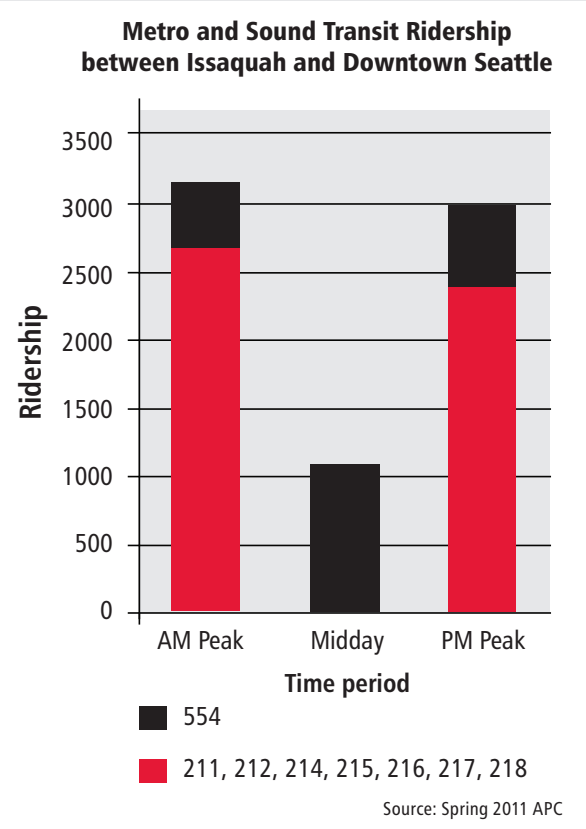
The I-90 corridor between Issaquah, Eastgate, and downtown Seattle is an example of the way Sound Transit and Metro coordinate service in a shared corridor. Sound Transit's Route 554 provides service all day, seven days a week, operating more than 70 daily trips. During peak periods, Metro operates routes that complement Route 554 and provide the majority of peak service between Issaquah and downtown Seattle.

Complementary Metro-Sound Transit Service in a Shared Corridor

Route	Between	And	Via	Number of peak trips	Average rides per trip
554	Issaquah	Downtown Seattle	I-90	28	40
211	Issaquah Highlands	First Hill, Seattle	I-90	9	29
212	Eastgate	Downtown Seattle	I-90	39	36
214	Issaquah	Downtown Seattle	I-90	20	32
215	North Bend	Downtown Seattle	I-90	10	48
216	Sahalee	Downtown Seattle	I-90	10	45
217	Downtown Seattle	Issaquah	I-90	5	42
218	Issaquah Highlands	Downtown Seattle	I-90	29	53

Source: Spring 2011

The next chart shows current ridership demand between Issaquah, Eastgate and downtown Seattle. As the chart shows, Metro provides most of the peak rides but Sound Transit service provides connections in the midday for more than 1,000 daily riders between Issaquah Highlands and downtown Seattle. The chart also shows how Sound Transit and Metro schedule service to be complementary, with Metro services accommodating high peak demand. The combination of Metro's more frequent peak trips and Sound Transit's all-day service with 20-minute frequency in the midday meets overall transit demand in the corridor.



In many corridors, Sound Transit provides at least 30-minute service all day, typically 5 a.m. to 12 a.m., while Metro provides additional service in the peak periods to help meet demand. By making the reduction of overcrowding our number-one priority, Metro ensures that additional demand is served.

The balance between Sound Transit and Metro corridors will continue to evolve. Currently, we analyze Metro services on selected regional, freeway-based corridors where Sound Transit does not provide service, or where Metro provides the major all-day connection. These corridors include Renton-to-downtown Seattle via I-5, and Northgate-to-downtown Seattle via I-5. The table below lists additional regional freeway-based corridors where Metro is the primary all-day service provider.

As Link service expands, Sound Transit will become the primary provider in additional corridors such as the Northgate-to-downtown Seattle corridor. As services are introduced and modified, Metro and Sound Transit will make adjustments to the network.

Corridors Primarily Served by Metro

Between	And	Via	Major route
Cowen Park	Downtown Seattle	University Way, I-5	73
Lake City	Downtown Seattle	NE 125th St, Northgate, I-5	41
Renton	Downtown Seattle	MLK Jr Way, I-5	101
Kent	Downtown Seattle	Tukwila	150
Totem Lake	Downtown Seattle	Kirkland, SR-520	255
University District	Bellevue	SR-520	271
Kenmore	University District	Lake Forest Park, Lake City	372
West Seattle	Downtown Seattle	Fauntleroy, Alaska Junction	54
Burien	Downtown Seattle	Delridge, Ambaum	120

2011 Corridor Service Family and Level of Service Summary

Corridor	Connections			Major route	Final suggested service levels		
	Between	And	Via		Peak	Off-Peak	Night
Resulting service family: Very Frequent							
5	Aurora Village	Seattle CBD	Aurora Ave N	E	< 15	15	15
8	Ballard	U. District	Green Lake, Greenwood	48 N	< 15	15	30
10	Ballard	Seattle CBD	15th Ave W	D	< 15	< 15	15
11	Ballard	U. District	Wallingford (N 45th St)	44	< 15	15	15
13	Beacon Hill	Seattle CBD	Beacon Ave	36	< 15	< 15	15
15	Bellevue	Redmond	NE 8th St, 156th Ave NE	B	< 15	15	15
17	Burien	Seattle CBD	Delridge, Ambaum	120	< 15	15	30
19	Burien	Seattle CBD	Des Moines Mem Dr, South Park	132	15	15	30
20	Capitol Hill	White Center	South Park, Georgetown, Beacon Hill, First Hill	60	< 15	15	30
21	Capitol Hill	Seattle CBD	15th Ave E	10	< 15	15	30
22	Capitol Hill	Seattle CBD	Madison St	12	< 15	15	30
23	Central District	Seattle CBD	E Jefferson St	3S	< 15	< 15	15
25	Cowen Park	Seattle CBD	University Way, I-5	73 EX	< 15	< 15	30
32	Federal Way	SeaTac	SR-99	A	< 15	15	15
34	Fremont	Seattle CBD	Dexter Ave N	26/28	< 15	15	15
35	Fremont	U. District	N 40th St	30/31	< 15	15	30
38	Greenwood	Seattle CBD	Greenwood Ave N	5	15	15	30
51	Kent	Seattle CBD	Tukwila	150	15	15	30
55	Lake City	Seattle CBD	NE 125th St, Northgate, I-5	41	< 15	15	30
59	Madison Park	Seattle CBD	Madison St	11	< 15	15	30
60	Madrona	Seattle CBD	Union St	2 S	< 15	15	30
66	Mount Baker	U. District	23rd Ave E	48 S	< 15	15	30
68	Northgate	U. District	Roosevelt	67	< 15	15	30
69	Northgate	Seattle CBD	Green Lake, Wallingford	16	15	15	30
70	Northgate	U. District	Roosevelt Way NE, NE 75th St	68	15	15	30
75	Queen Anne	Seattle CBD	Queen Anne Ave N	13	< 15	15	15
76	Queen Anne	Seattle CBD	Taylor Ave N	3 N	< 15	< 15	15
77	Rainier Beach	Seattle CBD	Rainier Ave	7	< 15	< 15	15
78	Rainier Beach	Seattle Center	MLK Jr Wy, E John St, Denny Way	8	15	15	30
83	Renton	Burien	S 154th St	F	< 15	15	15
104	U. District	Seattle CBD	Eastlake, Fairview	70	< 15	15	15
105	U. District	Seattle CBD	Broadway	49	15	15	15
106	U. District	Bellevue	SR-520	271	< 15	< 15	30
110	Wedgwood	Cowen Park	View Ridge, NE 65th St	71	< 15	15	30
111	West Seattle	Seattle CBD	Fauntleroy, Alaska Junction	C	< 15	15	15

KEY = UNDERSERVED / OVERSERVED

Corridor	Connections			Major route	Final suggested service levels		
	Between	And	Via		Peak	Off-Peak	Night
Resulting service family: Frequent							
2	Alki	Seattle CBD	Admiral Way	56	15	60	30
3	Auburn	Burien	Kent, SeaTac	180	15	30	30
9	Ballard	Lake City	Holman Road, Northgate	75	< 15	30	30
12	Ballard	Seattle CBD	W Nickerson, Westlake Av N, 9th Ave	17	15	30	30
14	Bellevue	Eastgate	Lake Hills Connector	271	15	30	30
18	Burien	Seattle CBD	1st Ave S, South Park, Airport Wy	131	15	30	30
24	Colman Park	Seattle CBD	Leschi, Yesler	27	15	30	30
26	Discovery Park	Seattle CBD	Gilman Ave W, 22nd Ave W, Thorndyke Av W	33	15	30	30
33	Federal Way	Kent	Military Road	183	15	30	30
40	Issaquah	Eastgate	Newport Way	271	15	30	30
45	Kenmore	U. District	Lake Forest Park, Lake City	372	15	30	30
50	Kent	Renton	Kent East Hill	169	15	30	30
52	Kent	Renton	84th Av S, Lind Av SW	153	15	30	30
56	Lake City	U. District	Lake City, Sand Point	75	15	30	30
57	Lake City	U. District	35th Ave NE	65	15	30	30
61	Magnolia	Seattle CBD	34th Ave W, 28th Ave W	24	15	30	30
64	Mount Baker	Seattle CBD	31st Av S, S Jackson St	14S	15	30	30
79	Rainier Beach	Capitol Hill	Rainier Ave	9	< 15	30	30
84	Renton	Seattle CBD	MLK Jr Wy, I-5	101	< 15	30	30
85	Renton	Rainier Beach	West Hill, Rainier View	107	15	30	30
86	Renton	Seattle CBD	Skyway, S. Beacon Hill	106	15	30	30
87	Renton	Renton Highlands	NE 4th St, Union Ave NE	105	15	30	30
93	Shoreline	U. District	Jackson Park, 15th Av NE	373	15	60	30
94	Shoreline CC	Northgate	N 130th St, Meridian Av N	345	15	30	30
97	Totem Lake	Seattle CBD	Kirkland, SR-520	255	< 15	30	30
99	Tukwila	Seattle CBD	Pacific Hwy S, 4th Ave S	124	15	30	30
100	Tukwila	Des Moines	McMicken Heights, Sea-Tac	156	15	30	30

KEY = UNDERSERVED / OVERSERVED

2011 Corridor Service Family and Level of Service Summary (continued)

Corridor	Connections			Major route	Final suggested service levels		
	Between	And	Via		Peak	Off-Peak	Night
112	White Center	Seattle CBD	16th Ave SW, SSCC	125	< 15	30	30
Resulting service family: Local							
1	Admiral District	Southcenter	California Ave SW, Military Rd, TIBS	128	30	30	60
4	Auburn/GRCC	Federal Way	15th St SW, Lea Hill Rd	181	30	30	60
6	Aurora Village	Northgate	Meridian Av N	346	30	30	60
7	Avondale	Kirkland	NE 85th St, NE Redmond Wy, Avondale Wy NE	248	30	30	60
16	Bellevue	Renton	Newcastle, Factoria	240	30	30	60
28	Eastgate	Bellevue	Somerset, Factoria, Woodridge	246	30	30	0
30	Enumclaw	Auburn	Auburn Wy S, SR 164	186	30	30	0
31	Fairwood	Renton	S Puget Dr, Royal Hills	148	30	30	60
36	Fremont	Broadview	8th Av NW, 3rd Av NW	28	30	60	60
37	Green River CC	Kent	132nd Ave SE	164	30	30	30
39	High Point	Seattle CBD	35th Ave SW	21	30	30	60
41	Issaquah	Overlake	Sammamish, Bear Creek	269	30	30	0
42	Issaquah	North Bend	Fall City, Snoqualmie	209	30	60	0
43	Kenmore	Kirkland	Juanita	234	30	60	0
44	Kenmore	Shoreline	Lake Forest Park, Aurora Village TC	331	30	30	0
48	Kent	Burien	Kent-DM Rd, S. 240th St, 1st Av S	131/ 166	30	30	30
49	Kent	Maple Valley	Kent-Kangley Road	168	30	30	60
53	Kirkland	Bellevue	South Kirkland	230 W	30	30	60
54	Kirkland	Factoria	Overlake, Crossroads, Eastgate	245	30	30	60
62	Mercer Island	S Mercer Island	Island Crest Way	204	30	60	0
63	Mirror Lake	Federal Way	S 312th St	901	30	30	60
65	Mountlake Terrace	Northgate	15th Ave NE, 5th Ave NE	347	30	30	60
67	NE Tacoma	Federal Way	SW 356th St, 9th Ave S	182	30	30	0
71	Othello Station	Columbia City	Seward Park	39	30	30	0
74	Pacific	Auburn	Algona	917	30	30	0
81	Redmond	Totem Lake	Willows Road	930	30	30	60
89	Renton Highlands	Renton	NE 7th St, Edmonds Av NE	908	30	30	0
90	Richmond Beach	Northgate	Richmond Bch Rd, 15th Ave NE	348	30	30	60
92	Sand Point	U. District	NE 55th St	30	30	60	30
95	Shoreline CC	Lake City	N 155th St, Jackson Park	330	30	30	0
101	Tukwila	Fairwood	S 180th St, Carr Road	155	30	30	0
102	Twin Lakes	Federal Way	SW Campus Dr, 1st Ave S	903	30	30	60
103	Twin Lakes	Federal Way	S 320th St	187	30	30	60
107	U. District	Seattle CBD	Lakeview	25	30	30	0

KEY = UNDERSERVED / OVERSERVED

Corridor	Connections			Major route	Final suggested service levels		
	Between	And	Via		Peak	Off-Peak	Night
113	White Center	Seattle CBD	Highland Park, 4th Ave S	23	30	30	60
Resulting service family: Hourly							
27	Eastgate	Bellevue	Newport Wy , S. Bellevue, Beaux Arts	222	60	60	0
29	Eastgate	Overlake	Phantom Lake	926	60	60	0
46	Kenmore	Totem Lake	Finn Hill, Juanita	935	60	60	0
47	Kennydale	Renton	Edmonds Av NE	909	60	60	0
58	Laurelhurst	U. District	NE 45th St	25	60	60	0
72	Overlake	Bellevue	Bell-Red Road	233	60	60	60
73	Overlake	Bellevue	Sammamish Viewpoint, Northup Wy	249	60	60	0
80	Redmond	Eastgate	148th Ave, Crossroads, Bellevue College	221	60	60	60
82	Redmond	Fall City	Duvall, Carnation	224	60	60	0
88	Renton	Enumclaw	Maple Valley, Black Diamond	149	60	60	0
91	S Vashon	N Vashon	Valley Center	118	60	60	0
96	Shoreline CC	Greenwood	Greenwood Av N	5	60	60	60
98	Totem Lake	Kirkland	Kingsgate	236	60	60	0
108	UW Bothell	Redmond	Woodinville, Cottage Lake	251	60	60	0
109	UW Bothell/CCC	Kirkland	132nd Ave NE, Lk Wash Voch Tech	238	60	60	0

KEY = UNDERSERVED / OVERSERVED

SECTION 2

ROUTE PERFORMANCE ANALYSIS

Metro applies performance guidelines to assess the productivity and service quality of its routes. We evaluate individual routes and identify where adjustments could make service more cost-effective and could reduce crowding and improve on-time performance.

Productivity measures

Two productivity measures are used to evaluate individual route performance:

1. **Rides per platform hour** is the total rides per hour that a bus provides from the time it leaves its base until it returns. Routes with many riders boarding the bus during each trip tend to perform well on this measure.
2. **Passenger miles per platform mile** is the sum of miles traveled by all passengers per mile the bus operates from its base until it returns. Routes that have full, even loading tend to perform well on this measure—including routes that pick up many riders at transit centers or park-and-rides, then travel long distances with few people getting on or off on the way to their destination.

Rides per platform mile and passenger miles per platform hour measure different types of performance. The comparison of routes 10 and 101, in the box at right, illustrates the differences between the two measures.

We also divide routes into two categories based on the market served:

- **Seattle core** routes serve downtown Seattle, First Hill, Capitol Hill, South Lake Union, the University District, or Uptown.
- **Non-Seattle-core** routes serve other areas of Seattle and King County.

Routes serving the Seattle core are expected to perform at a higher level because their potential market is greater than for routes serving other areas of King County.

Defining high and low performance

Within the two markets, we analyze route productivity for peak, off-peak, and night periods. In accordance with the guidelines,

How two productivity measures give the full picture

Route 10 provides service between Capitol Hill and downtown Seattle. It tends to have many riders on board between downtown Seattle and Broadway, with fewer riders on board east of that point. It is among the top 25 percent of routes in rides per platform hour but among the bottom 25 percent in passenger miles per platform mile. In other words, it serves many riders per hour of service, but since many riders don't ride the full length of the route, it has fewer passenger miles relative to the total miles that it operates.

Route 101 provides service between Renton and downtown Seattle. Many riders board Route 101 near the ends of the route and ride almost the full length. It is among the top 25 percent of routes in passenger miles per platform hour, indicating a full and even load. However, it is not among the top routes for rides per platform hour, because it has fewer individual riders boarding the route each hour than the top routes have.

Both of these routes provide value to the transit network, but illustrate how looking at performance on just one measure does not give a full picture of route performance.

we consider routes to be high performers if they rank in the top 25 percent of routes that operate in the same time period and serve the same market. We consider routes to be low performers if they rank in the bottom 25 percent.

Since the thresholds for performance are defined as the top and bottom 25 percent, the numerical value of the thresholds changes for every analysis. For the spring 2011 analysis, the values of the route performance thresholds were higher than they were in fall 2010, indicating a systemwide improvement in productivity. This improvement resulted from growth in Metro's systemwide ridership, from service cuts targeting low-performing trips, and from actions taken to improve scheduling efficiency that focused on reducing platform hours while maintaining existing trips. The charts below illustrate the threshold values for route performance for spring 2011.

Threshold values for route performance were highest for the off-peak on both measures, followed by threshold values for peak and night periods. This was true for both Seattle core and non-Seattle core routes. This difference occurred because buses spend more time and miles carrying no passengers during peak hours as they travel to places where they will provide single-direction service to major employment centers.

Spring 2011 Threshold Values

Routes that serve Seattle core	Peak		Off-peak		Night	
	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
Top 25%	42.0	12.9	52.6	15.2	32.0	8.4
Bottom 25%	18.6	7.9	29.4	9.8	17.7	5.8

Routes that do not serve Seattle core	Peak		Off-peak		Night	
	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
Top 25%	27.0	7.2	27.4	9.3	20.3	6.2
Bottom 25%	9.8	2.9	12.7	3.3	8.8	2.6

RESULTS

The 2011 analysis compared the performance of 244 routes — 161 routes serving the Seattle core and 83 routes not serving the Seattle core. School and custom bus routes were not included. Local and express variants with the same number were analyzed separately if both routes operated in the same direction and time period. Routes with parts (e.g. Route 2 North and 2 South) were analyzed separately. We calculated performance measures based on ridership and service levels in spring 2011.

The following table shows the number of low- and high-performing Metro routes. Some routes were high or low performers on both measures, clearly indicating how a route was performing. However, some routes performed highly on one measure but not the other.

Of the 244 bus routes examined, 65 routes are in the bottom 25 percent on both performance measures in at least one time period. Of these 65 routes, 39 serve the Seattle core and 26 do not serve the Seattle core. Four routes that serve the Seattle core and nine that do not serve the Seattle core are in the bottom 25 percent on both measures in multiple time periods.

Routes and their associated hours as depicted in the table may be counted in more than one performance category since routes are evaluated for different time periods and measures. For example, a route may be a top performer during the peak, but a low performer at night.

Low-and High-Performing Metro Routes

	# Seattle core routes			# Non-Seattle core routes			
Performance	**Peak**	**Off-peak**	**Night**	**Peak**	**Off-peak**	**Night**	**Annual hours**
Top 25% in both measures	18	8	8	17	13	9	755,000
Top 25% in rides per platform hour only	21	10	9	2	4	2	381,000
Top 25% in passenger miles per platform mile only	23	10	9	2	3	2	461,000
Bottom 25% in both measures	24	11	8	15	11	9	274,000*
Bottom 25% in rides per platform hour only	15	7	9	3	5	1	274,000*
Bottom 25% in passenger miles per platform mile only	14	6	8	3	4	1	197,000

*It is coincidental that the number of hours in services in the bottom 25% in rides per platform hour only matches the number of hours in the bottom 25% in both measures.

Using the results to improve efficiency and effectiveness

This analysis highlights areas where we might make adjustments to improve the overall performance of the Metro system. As the table shows, for spring 2011 Metro had 274,000 annual service hours invested in routes that were low performers on both performance measures. We review low-performing routes to identify opportunities to revise, consolidate, or eliminate services in order to improve performance. Reducing investments in low-performing routes and reallocating resources to better-performing routes is one way to make our system more efficient. In other instances, modifying routes can make them more attractive to riders. Service restructures that address multiple routes are another way to help the system work better.

Before any service reductions or changes are made, however, routes are reviewed within the context of the network and according to the guidelines. Some routes provide value because they are the only connection between activity centers or the only service in a community.

When we are faced with making service reductions, the guidelines ensure that social equity and geographic value are primary considerations as those decisions are made. We do not propose reduction or elimination of low-performing services that offer the only public transportation option in a geographic area, or that serve a community with a high proportion of people who depend on public transportation, until other opportunities are considered. In some instances, Metro may identify alternative service delivery strategies to meet the mobility needs of communities served by low-performing routes. These strategies could include dial-a-ride-transit as an alternative to existing fixed-route service, or other services such as ridesharing, community vans, or Community Access Transportation.

The table shows the hours of low-productivity services by their reduction priority. (For a full discussion of reduction priorities, see page SG-16 in the Service Guidelines.) The services at the top of the table would be the first to be considered for reduction. If more hours were needed for reductions or reinvestments, services farther down the list would be considered.

Priority for Reducing Services in the Bottom 25% on Both Measures*

Category	Number of Seattle core routes	Number of non-Seattle core routes	Annual hours
Peak routes not meeting one or more peak criteria	8	0	70,000
All-day routes that operate on over-served corridors	3	6	31,000
All-day routes that operate on adequately served corridors	6	14	68,000
All-day routes that operate on under-served corridors	5	3	23,000

*Additional low productivity hours (approximately 80,000 hours) are on peak routes meeting peak criteria or on routes that are not on the All-Day and Peak Network.

Sources: Spring 2011 APC, 2011 corridor analysis

The guidelines analysis also helps guide service investments. For example, when new service hours or funds are available, investment in top-performing routes is another way to improve overall system performance.

PERFORMANCE HIGHLIGHTS

Routes that do not serve the Seattle core

Top 25 percent on both measures

Top performers among routes that do not serve the Seattle core included seven routes that were in the top 25 percent in all time periods on both measures: the A Line between Federal Way and Tukwila and the routes shown in the table below. This set of top-performers includes routes on all three of Metro's six proposed RapidRide corridors that will not serve Seattle. The 253 was one of the routes replaced by the B Line in fall 2011, and the 140 will be replaced by the F Line in fall 2013.

The other top routes offer all-day service primarily in south King County, to regional growth and activity centers such as Des Moines, Green River Community College, Kent, Southcenter, Renton, and West Seattle's Alaska Junction.

Top Performers on Both Performance Measures, Non-Seattle Core, Spring 2011

Route	Between	And	Via
A Line	Federal Way	Tukwila	Kent, Des Moines and SeaTac
128	Southcenter	Admiral District	Alaska Junction and White Center
140	Burien	Renton	Tukwila and Southcenter
164	Kent	Green River Community College	Lake Meridian P&R
166	Des Moines	Kent	Highline Community College
169	Renton	Kent	Kent East Hill
253	Redmond	Bellevue	Overlake

Connections between centers

Other top performers in multiple time periods and measures included routes connecting activity centers and regional growth centers. All-day routes in south and east King County that performed well connect many of the largest regional growth centers outside of Seattle, including Auburn, Bellevue, Federal Way, Kent, Overlake, Renton, Redmond, and SeaTac. All-day routes in north Seattle and Shoreline that performed well include the network of routes in north Seattle that were created through a service restructure in the early 2000s. These top-performing routes are shown in the table on the next page.

Top Performers Connecting Regional Centers, Spring 2011

Route	Between	And	Via
South & East			
105	Renton Highlands	Renton	Renton Technical College
180	Burien	Auburn	Kent and SeaTac
181	Federal Way	Green River CC	Auburn
187	Twin Lakes	Federal Way	SW 320th Street
230 East	Redmond	Bellevue	Crossroads and Overlake
230 West	Kingsgate P&R	Bellevue	Kirkland
240	Bellevue	Renton	Newcastle, Factoria, and Eastgate
North			
330	Shoreline	Lake City	Fircrest
331	Shoreline Community College	Kenmore	Lake Forest Park
345	Shoreline	Northgate	North Seattle Community College
346	Aurora Village	Northgate	Meridian Avenue
347	Mountlake Terrace	Northgate	North City
348	Richmond Beach	Northgate	North City

Routes that serve the Seattle core

Top 25 percent in both measures

Top performers among Seattle core routes were the 49 and 72—the only routes that performed in the top 25 percent on both measures in all time periods. These two routes travel between downtown Seattle and the University District, the most popular transit destinations in King County. Route 72 also provides service north of the University District to Lake City. Other routes between downtown Seattle and the University District were also top performers, as were cross-town services to the University District. Several routes in the future RapidRide D and E line corridors were also top performers. These top performing routes are shown in the table below.

Top Performers on Both Performance Measures, Seattle Core, Spring 2011

Route	Between	And	Via
15	Blue Ridge	Downtown Seattle	Ballard and Uptown
15EX	Blue Ridge	Downtown Seattle	Ballard
18	North Beach	Downtown Seattle	Ballard
18EX	North Beach	Downtown Seattle	Ballard and Uptown
43	University District	Downtown Seattle	Capitol Hill
44	Ballard	University District	Wallingford
48 South	Mount Baker	University District	Capitol Hill and Montlake
49	University District	Downtown Seattle	Capitol Hill and Broadway
71	Wedgwood	Downtown Seattle	University District
72	Lake City	Downtown Seattle	University District
73	Jackson Park	Downtown Seattle	University District
358	Aurora Village	Downtown Seattle	Green Lake

Connections within Seattle

Routes connecting downtown Seattle with central Seattle neighborhoods and employment centers were also among the top performers, especially in rides per platform hour. Routes 1, 2N, 3N, 4N, and 13 connecting Queen Anne and downtown Seattle as well as routes 2S, 3S, and 4S connecting Capitol Hill and central Seattle were top performers on this measure. They illustrate a characteristic of many central-Seattle routes that have high rides per platform hour but are not top performers in passenger miles per platform mile. In central Seattle many routes begin in residential neighborhoods where relatively few riders are on board the bus at the beginning of a route. While many riders may be on board at other points, if a route has relatively few riders at some points it will have lower performance on passenger miles per platform mile.

Top Performers With Connections Within Seattle, Spring 2011

Route	Between	And
1	Kinnear	Downtown Seattle
2	West Queen Anne	Downtown Seattle
2	Madrona	Downtown Seattle
3	North Queen	Downtown Seattle
3	Madrona	Downtown Seattle
4	East Queen Anne	Downtown Seattle
4	Judkins Park	Downtown Seattle
13	Seattle Pacific University	Downtown Seattle

Suburban King County and downtown Seattle connections

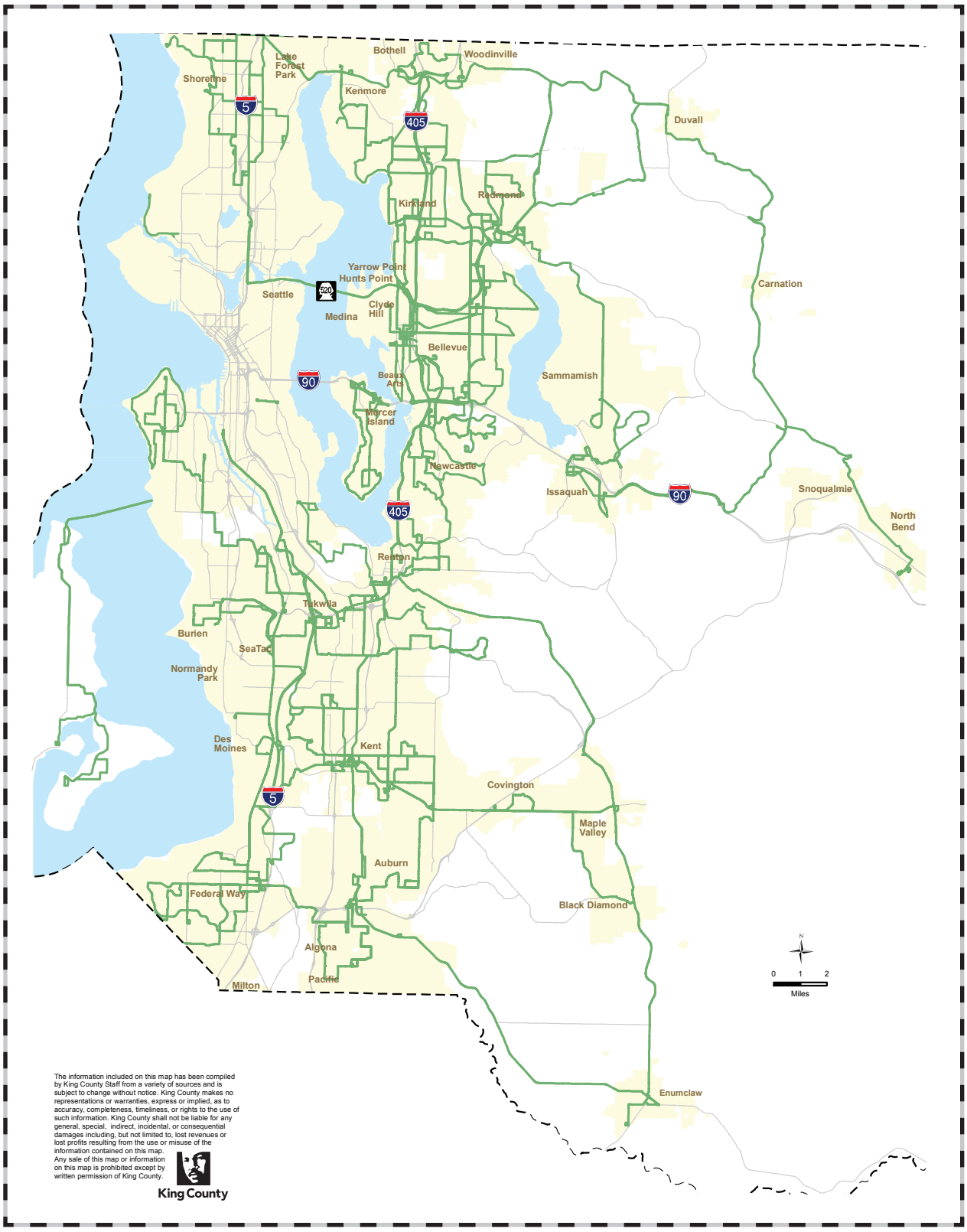
Routes connecting east and south King County to downtown Seattle included several top performers. All-day routes 101, 120, and 150, providing connections with Burien, Kent, Renton, and Tukwila, were among the top performers on passenger miles per platform mile in all time periods. However, only Route 120 was also a top performer in rides per platform hour in any time period. The two top performers overall for passenger miles per platform mile were peak-only Route 218 serving Eastgate and Issaquah Highlands and Route 301 serving Richmond Beach and Shoreline. Riders on these routes generally board very close to the beginning of the route and ride long distances relative to the total route distance.

Top Performers Connecting Seattle and Suburban King County, Spring 2011

Route	Between	And	Via
101	Renton	Downtown Seattle	ML King Jr. Way
120	Burien	Downtown Seattle	White Center and Delridge
150	Kent	Downtown Seattle	Southcenter
218	Issaquah Highlands P&R	Downtown Seattle	I-90
301	Richmond Beach	Downtown Seattle	Shoreline

FIG. 6

Routes that Do Not Serve the Seattle Core, Spring 2011



Route Data

Spring 2011 Route Performance: Routes that Do Not Serve the Seattle Core

				Peak		Off-peak		Night	
Route	Between	And	Via	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
A Line	Federal Way	Tukwila	Kent, Des Moines, SeaTac	35.6	10.6	42.8	14.6	27.6	9.1
38	Beacon Hill	Mount Baker	S. McClellan St.			14.6	**1.3**		
51	Alaska Junction	Admiral District	35th Ave SW, Admiral Way	25.1	3.2	19.5	3.6		
53	Alaska Junction	Alki	Beach Dr Harbor Ave SW			**12.5**	3.6		
105	Renton Highlands	Renton Transit Cntr	Renton Technical College	39.2	8.2	39.2	8.9	20.4	4.1
107	Renton	Rainier Beach	Rainier Ave S.	26.1	6.6	25.1	7.7	15.7	4.9
110	Southwest Renton	N Renton Tukwila Sounder Station	Renton Transit Center	16.6	**1.8**				
118	Vashon Island	Tahlequah	Vashon Hwy SW	23.3	4.6	**9.6**	**2.4**	**4.6**	**1.0**
119	Vashon Island	Dockton	Vashon Hwy SW	16.3	4.8	13.9	**3.1**	**2.5**	**0.3**
128	Southcenter	Admiral District	White Center	38.7	13.4	36.5	17.1	20.4	6.4
129	Riverton Heights	Tukwila Int'l Blvd Station	24th Ave S – Military Rd S	**7.9**	**0.8**				
139	Burien	Highline Comm Hosp	4 Ave-164St – 21 St SW – SW 152..	20.9	2.9	14.8	**2.5**	**8.0**	**1.1**
140	Burien via	Renton	Tukwila and Southcenter	28.8	9.7	31.0	11.2	29.2	10.6
148	Fairwood	Renton		23.5	6.5	25.5	8.9	21.1	6.1
149	Enumclaw	Renton	Maple Valley	**3.7**	**2.2**	**4.6**	**2.7**		
153	Renton	Kent	E Valley Road	23.6	5.4	29.0	8.3		
154	Tukwila	Federal Center S	E Marginal Way	14.5	3.9				
155	Southcenter	Carriagewood	S Center Prkwy – S 80	16.3	3.9	19.4	5.7		
156	Tukwila	SeaTac South Center	Intl Blvd – S 176 – Military Rd	13.1	3.2	**11.2**	3.3		
164	Kent	Green River CC	Lake Meridian P&R	50.9	11.2	54.8	14.9	29.8	6.3
166	Des Moines	Kent	Highline Community College	36.5	11.9	35.2	13.5	22.7	7.1
168	Kent	Timberlane	Lake Meridian P&R	25.1	5.9	25.7	6.9	15.8	4.7
169	Renton	Kent	Canyon Dr 104th/108th Ave SE	45.6	16.4	42.2	18.0	26.1	8.4
173	Federal Way	Federal Center S	E. Marginal Way – I-5	9.8	4.7				
180	Burien	Auburn	Kent	35.0	12.1	32.2	13.1	15.3	5.5
181	Federal Way	Auburn	SW 320 St – Peasley Canyon Rd	31.3	9.4	29.9	10.2	20.2	4.9
182	Federal Way	Twin Lakes	Federal Way TC – Auburn Station	17.3	3.7	23.4	7.6	10.8	2.6
183	Kent	Federal Way	Star Lake	23.3	5.9	28.7	11.1		

KEY: Spring 2011 threshold values for routes that do not serve the Seattle core	Top 25%	27.0	7.2	27.4	9.3	20.3	6.2
	Bottom 25%	**9.8**	**2.9**	**12.7**	**3.3**	**8.8**	**2.6**

				Peak		Off-peak		Night	
Route	**Between**	**And**	**Via**	**Rides/ Platform hour**	**Passenger miles/ Platform mile**	**Rides/ Platform hour**	**Passenger miles/ Platform mile**	**Rides/ Platform hour**	**Passenger miles/ Platform mile**
186	Auburn	Enumclaw	Auburn-Enumclaw Rd	14.5	3.8	17.4	6.6		
187	Twin Lakes	Federal Way	S 320 St	34.0	5.9	39.4	8.5	14.9	2.7
200	North Issaquah	Downtown Issaquah	Pickering Place, Gilman Village	**9.3**	**1.7**	14.7	3.8		
201*	S Mercer Island	N Mercer Island	W Mercer Way	**4.0**					
203*	N Mercer Island	E Mercer Island	Mercer Island City Hall	17.7		32.4			
204*	N Mercer Island	S Mercer Island	78 Ave – Island Crest Way			13.9			
209	North Bend	Issaquah	I-90	10.4	5.6	12.8	8.1	**5.4**	**2.3**
213*	N Mercer Island	E Mercer Island	Covenant Shores			23.1			
219	Newcastle	Factoria	Newport Hills	**4.2**	**0.5**				
221	Redmond	Eastgate	Crossroads	17.0	5.0	17.8	5.7	12.4	2.7
222 (241)	Bellevue	Eastgate	Beaux Arts, Factoria	15.6	3.3	16.0	4.7	**8.3**	**2.4**
224	Redmond	Fall City	Duvall, Stillwater, Carnation	**4.4**	**1.4**	**4.8**	**1.7**		
230E	Redmond	Bellevue	Crossroads, Overlake	36.3	8.6	25.9	9.6	26.1	6.5
230W (235)	Kingsgate P&R	Bellevue	Kirkland	28.2	7.2	21.4	7.9	11.9	4.5
232	Duvall	Bellevue	Redmond, Overlake	15.5	4.8				
233 (226)	Bellevue	Bear Creek P&R	Overlake	23.0	5.5	22.2	6.4	13.5	3.2
234	Kenmore	Bellevue	Kirkland TC	16.2	5.7	12.7	5.6	8.8	3.3
236	Woodinville	Kirkland	Brickyard P&R	9.8	**2.8**	**9.3**	3.3	**4.8**	**1.3**
237	Woodinville	Bellevue	I-405	13.7	5.1				
238	Bothell	Kirkland	Brickyard P&R	13.6	3.7	14.1	4.6	**6.3**	**2.1**
240	Bellevue	Renton	Newcastle, Factoria, Eastgate	27.9	9.9	24.5	12.6	12.9	5.5
242	Northgate	Overlake	Greenlake P&R	16.7	9.1				
244EX	Kenmore	Overlake	Kingsgate	11.7	4.7				
245	Kirkland	Factoria	Overlake, Crossroads, Eastgate	22.4	6.2	20.2	6.0	15.7	3.7
246	Bellevue	Eastgate	Factoria	**9.6**	**1.8**	**8.5**	**2.0**		
247	Kent/Renton	Overlake	Eastgate	**4.8**	**1.3**				
248	Kirkland	Avondale	Redmond, Bear Creek P&R	20.1	5.5	17.5	5.0	12.4	3.2
249	Bellevue	Overlake	South Kirkland	15.6	4.5	14.9	5.3	**5.0**	**1.4**
251	Bothell	Redmond	Woodinville	**8.6**	2.9	**9.8**	3.5	**5.9**	**1.3**
253	Redmond	Bellevue	Overlake	35.2	11.3	36.4	12.5	31.6	8.9
269	Overlake	Issaquah	Sammamish	**8.0**	3.2	**11.0**	5.0	**8.6**	3.1
330	Shoreline	Lake City	Fircrest	29.3	5.9				

KEY: Spring 2011 threshold values for routes that do not serve the Seattle core	Top 25%	27.0	7.2	27.4	9.3	20.3	6.2
	Bottom 25%	**9.8**	**2.9**	**12.7**	**3.3**	**8.8**	**2.6**

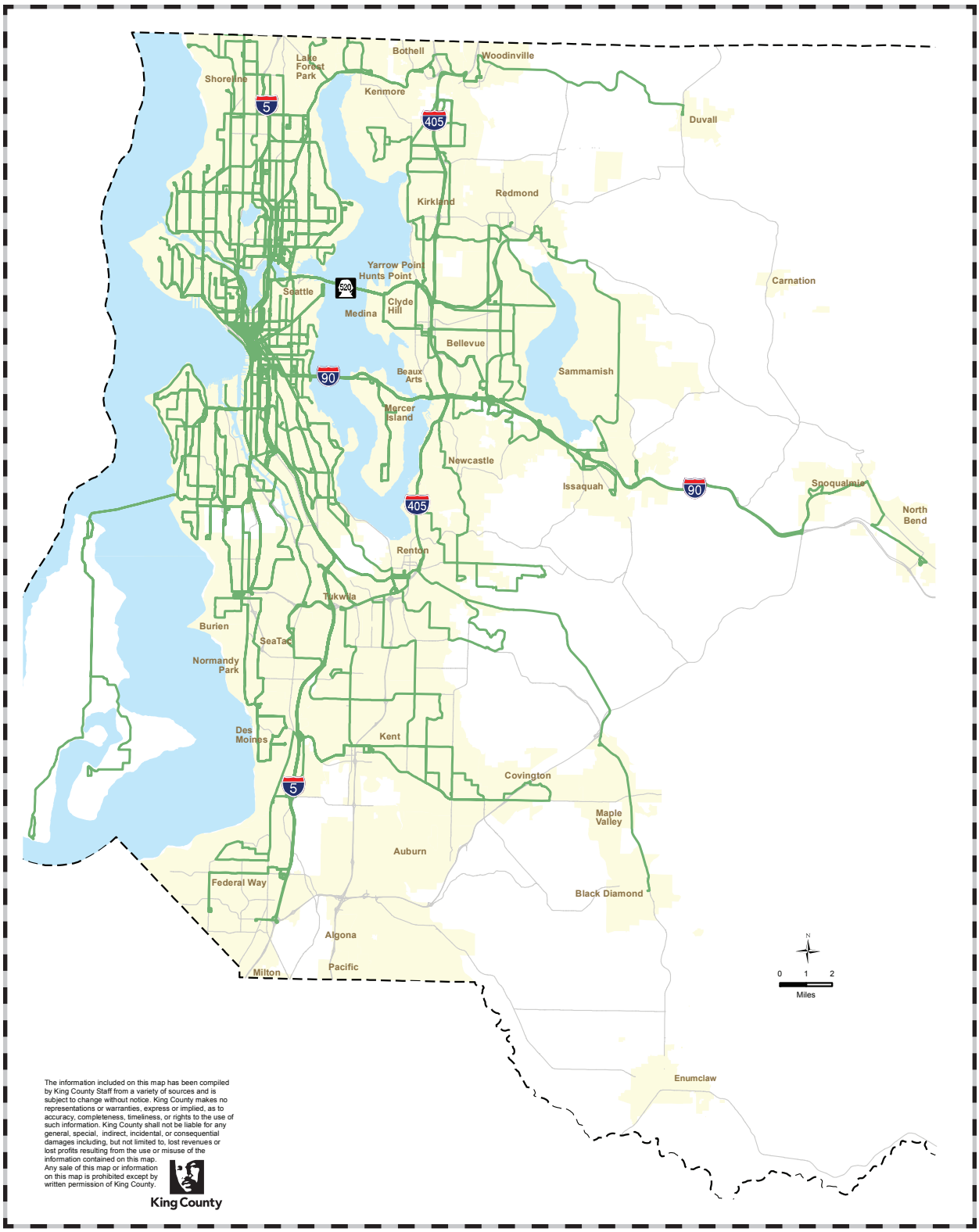
				Peak		Off-peak		Night	
Route	Between	And	Via	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
331	Shoreline CC	Kenmore	LFP	19.4	7.2	23.0	8.1	9.7	3.8
342	Shoreline	Renton	Bellevue	14.7	4.7				
345	Shoreline	Northgate	North Sea CC, NW Hosp	41.5	11.1	40.1	12.1	16.2	6.3
346	Aurora Vllg Trnst Cntr	Northgate	Meridian Avenue	40.1	10.8	32.8	10.8	15.1	5.7
347	Mountlake Terrace	Northgate	North City	28.2	8.0	26.5	8.5	19.8	5.4
348	Richmond Beach	Northgate	North City	29.7	7.4	27.7	9.6	18.1	6.5
901DART	Federal Way DART		SW 312 – SW Dash Rd	18.6	3.2	19.0	**2.8**	14.3	**2.4**
903DART	Federal Way DART		Federal Way Community Center	18.1	4.3	15.9	3.6	11.8	3.6
908DART	Renton Highlands	Renton	Group Health, Renton Technical College	**7.8**	**2.0**	**6.6**	**1.8**		
909DART	Kennydale	Renton DART	Group Health	12.5	3.1	**10.8**	**2.8**		
910DART	N Auburn	Supermall	Auburn Station			**7.5**	**1.7**		
912	Enumclaw	Covington	Black Diamond	**1.2**	**0.3**				
913DART	Riverview	Kent	Riverside Blvd S, 76th Ave S	**4.3**	**1.2**	**4.3**	**1.1**		
914DART	Kent DART		Kent East Hill			19.7	6.9		
916DART	Kent DART		76th Ave S			17.1	9.8		
917DART	Auburn	Pacific	Algona	14.7	3.9	13.1	3.4		
918DART	North Kent	Kent	64th Ave S, 76th Ave S	10.3	**1.9**				
919DART	Auburn DART		Auburn Way S			15.4	3.7		
925DART	Newcastle	Factoria	Newport Hills	**1.0**	**0.5**				
926DART	Eastgate	Crossroads DART	Phantom Lake	**8.4**	**2.2**	**7.4**	**1.9**		
927DART	Issaquah	Sammamish	Issaquah Commons, Highlands	**6.0**	**2.6**	**5.2**	**2.1**		
930DART	Redmond	Totem Lake	Willows Rd	**8.4**	**2.7**				
935DART	Kenmore	Totem Lake	Juanita Dr NE – NE 141 – 84th Ave	**4.8**	**1.7**	**3.4**	**1.2**		

KEY: Spring 2011 threshold values for routes that do not serve the Seattle core	Top 25%	27.0	7.2	27.4	9.3	20.3	6.2
	Bottom 25%	**9.8**	**2.9**	**12.7**	**3.3**	**8.8**	**2.6**

* Passenger miles data was unavailable on some routes and time periods due to lack of APC data; see page 4 for details.

FIG. 7

Routes that Serve the Seattle Core, Spring 2011



Spring 2011 Route Performance: Routes that Serve the Seattle Core

				Peak		Off-peak		Night	
Route	Between	And	Via	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
1	Queen Anne Hill	Downtown Seattle	Olympic Way	74.8	14.7	68.9	15.4	34.0	6.6
2N	Queen Anne Hill	Downtown Seattle	Queen Anne Ave.	66.8	11.7	76.2	15.7	34.6	6.0
2NEX	Queen Anne Hill	Downtown Seattle	Queen Anne Ave.	30.9	**5.1**				
2S	Madrona	Downtown Seattle	Queen Anne Ave.	57.2	10.3	57.8	11.6	29.1	5.8
3N	N Queen Anne Hill	Downtown Seattle	East Queen Anne	72.2	12.1	71.9	13.4	37.7	8.7
3S	Madrona	Downtown Seattle	E Jefferson St.	58.2	10.3	57.5	12.0	28.3	5.9
4N	E Queen Anne Hill	Downtown Seattle	Seattle Center	76.3	14.0	63.7	11.2	31.4	7.2
4S	Judkins Park	Downtown Seattle	E Jefferson St.	51.1	10.5	44.9	9.9	26.9	5.9
5	Greenwood	Downtown Seattle	Phinney Ave	46.8	12.1	49.0	14.6	30.1	8.3
5EX	Greenwood	Downtown Seattle	I-5	37.3	13.4				
7	Rainier Beach	Downtown Seattle	Rainier Ave	43.6	13.6	53.0	17.4	27.9	7.9
7EX	Rainier Beach	Downtown Seattle	Rainier Ave	25.0	**6.4**				
8	Rainier Beach	Queen Anne	Capitol Hill	52.4	11.8	42.6	12.0	32.1	8.3
9EX	Rainier Beach	Capitol Hill	Columbia City	38.1	10.7	40.4	15.9		
10	Capitol Hill	Downtown Seattle	15 Ave – Pine St.	51.0	**7.7**	56.7	10.9	34.0	**4.8**
11	Madison Park	Downtown Seattle	E. Madison – Pine St.	50.4	8.7	56.3	12.0	34.9	**5.6**
12	Capitol Hill	Downtown Seattle	E. Madison	50.3	9.5	44.7	10.5	19.3	**3.7**
13	Sea Pac U, Queen Anne	Downtown Seattle	East Queen Anne	67.7	11.6	66.3	13.3	29.2	6.2
14N	Summit	Downtown Seattle	Pine – 3rd Ave	46.1	**6.2**	46.2	**6.8**	19.9	**3.3**
14S	Mount Baker	Downtown Seattle	S. Jackson – 31st Ave S.	34.8	**6.3**	43.4	**9.7**	21.3	**3.7**
15	Blue Ridge	Downtown Seattle	Ballard	64.0	13.8	64.5	16.9	31.2	8.4
15EX	Blue Ridge	Downtown Seattle	Ballard, Uptown	47.1	16.5				
16	Northgate	Downtown Seattle	Green Lake, Wallingford	37.7	12.5	36.1	12.6	20.5	7.7
17EX	Ballard	Downtown Seattle	Ballard	42.1	14.6				
17	Loyal Heights	Downtown Seattle	Ballard, S Lake Union	38.4	10.2	36.5	12.6	17.8	6.9
18EX	N Beach	Downtown Seattle	Ballard	49.7	16.5				
18	N Beach	Downtown Seattle	Ballard, Uptown	58.0	12.0	59.9	15.3	33.0	8.1
19	W Magnolia	Downtown Seattle	Seattle Center	23.1	**7.7**				
21EX	Arbor Heights	Downtown Seattle	35th Ave SW, Alaskan Way Viaduct	32.8	12.9				
21	Arbor Heights	Downtown Seattle	35th Ave SW, 4th Ave S	24.9	**7.4**	**24.2**	9.9	**14.0**	**5.1**
22	White Center	Downtown Seattle	Alaska Junction, SODO	25.2	8.3	**20.3**	**8.8**		
23	White Center	Downtown Seattle	Highland Pk Wy	37.5	14.4	**28.2**	11.0	**15.0**	5.8
24	Magnolia	Downtown Seattle	Viewmont Way – Elliott Ave W.	39.2	10.7	**29.3**	**9.0**	**13.8**	**4.9**
25	Laurelhurst	Downtown Seattle	U District	18.7	**4.9**	**13.1**	**4.9**		
26	Wallingford	Downtown Seattle	Fremont	59.4	11.8	52.9	11.7	32.8	7.0
26EX	Wallingford	Downtown Seattle	NE 40th St-N35th-Dexter Ave N	37.9	9.2				

KEY: Spring 2011 threshold values for routes that serve the Seattle core	Top 25%	42.0	12.9	52.6	15.2	32.0	8.4
	Bottom 25%	**18.6**	**7.9**	**29.4**	**9.8**	**17.7**	**5.8**

				Peak		Off-peak		Night	
Route	Between	And	Via	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
27	Colman Park	Downtown Seattle	Yesler Way	40.0	**7.5**	31.1	**7.0**	18.7	**5.2**
28	Broadview	Downtown Seattle	Fremont	48.5	10.9	48.1	13.0	29.9	7.4
28EX	Broadview	Downtown Seattle	Whittier Heights	36.3	11.7				
30	Sand Point	Queen Anne	U District	36.4	11.6	30.6	10.1	25.4	7.7
31	Magnolia	U District	Fremont	35.2	9.7	**24.4**	**9.6**		
33	Magnolia	Downtown Seattle	Elliott Ave W	47.9	11.1	30.5	**8.5**	**15.0**	**4.2**
34EX	Seward Park	Downtown Seattle	Rainier Ave	22.3	**6.3**				
35	Harbor Island	Downtown Seattle	4th Ave	**8.6**	**1.6**				
36	Othello Station	Downtown Seattle	Beacon Hill	44.9	11.2	47.9	14.6	24.6	6.7
37	Alaska Junction	Downtown Seattle	Beach Dr, Harbor Ave SW	**16.6**	**6.4**				
39	Rainier Beach	Downtown Seattle	Seward Park, Beacon Hill	28.0	**7.7**	**23.6**	**8.5**	**9.9**	**3.4**
41	Northgate	Downtown Seattle	I-5	48.4	16.9	45.4	21.8	34.8	17.0
42	Pioneer Square	Columbia Public Health Center	Rainier Ave – ML King Jr Way	**9.1**	**1.8**	**10.3**	**2.5**		
43	U District	Downtown Seattle	Capitol Hill	48.4	14.1	44.0	14.1	30.3	8.2
44	Ballard	U District	Wallingford	56.8	18.1	49.7	19.6	31.5	7.7
45EX	Queen Anne	U District	N 40th	19.7	**5.2**				
46	Shilshole	U District	Fremont	19.8	**4.2**	**6.6**	**1.2**		
48N	Loyal Heights	U District	Greenlake	47.8	8.8	51.7	10.9	31.3	6.3
48NEX	Loyal Heights	U District	Greenwood	32.3	9.1				
48S	Mount Baker	U District	Capitol Hill Montlake	66.5	14.8	60.8	13.9	33.8	7.6
49	U District	Downtown Seattle	Capitol Hill, Broadway	50.8	16.9	54.2	17.5	48.5	12.8
54	White Center	Downtown Seattle	Fauntleroy	29.5	11.5	36.2	14.6	24.7	10.2
54EX	Fauntleroy	Downtown Seattle	Alaskan Way Viaduct	34.3	12.6				
55	Admiral District	Downtown Seattle	California Ave – Alaskan Way Viaduct	38.9	15.1	31.9	12.6	**17.4**	7.2
56	Alki	Downtown Seattle	SW Admiral Way	30.4	10.1	**23.2**	**8.8**	**11.4**	**4.2**
57	Alaska Junction	Downtown Seattle	Admiral	21.6	8.1				
60	Broadway	White Center	Georgetown, Beacon Hill	31.3	9.3	29.8	**9.5**	**16.1**	**4.7**
64EX	Lake City	First Hill	Wedgwood, U District	30.0	11.2				
65	Lake City	U District	Wedgwood	39.6	8.4	38.3	**9.7**	19.8	**4.9**
66EX	Northgate	Downtown Seattle	Roosevelt Dist, Eastlake	35.8	12.4	**28.2**	12.2	20.6	7.1
67	Northgate	U District	Roosevelt Way, 11th Ave – 12 Ave	44.5	9.3	61.0	14.7	43.6	6.8
68	Northgate	U District	Roosevelt, 25th Ave NE	60.0	13.8	66.3	17.0		
70	U District	Downtown Seattle	Eastlake	39.8	10.4	32.2	10.2	**15.9**	**3.5**
71	Wedgwood	U District	Latona	54.3	16.6	48.8	19.0	32.6	10.8
72	Lake City	Downtown Seattle	Ravenna	52.2	17.1	53.2	20.7	34.0	11.1
73	Jackson Park	Downtown Seattle	Maple Leaf – U District	48.5	14.3	48.9	18.2	36.9	11.9

KEY: Spring 2011 threshold values for routes that serve the Seattle core	Top 25%	42.0	12.9	52.6	15.2	32.0	8.4
	Bottom 25%	**18.6**	**7.9**	**29.4**	**9.8**	**17.7**	**5.8**

				Peak		Off-peak		Night	
Route	Between	And	Via	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
74EX	Sand Point	Downtown Seattle	U District	43.2	11.6				
75	Ballard	U District	Northgate	45.8	12.7	41.2	11.7	25.8	8.0
76	Wedgwood	Downtown Seattle	Hawthorne Hills	40.3	12.4				
77EX	North City	Downtown Seattle	Maple Leaf	28.1	10.8				
79EX	Lake City	Downtown Seattle	Ravenna – U District	**18.5**	**5.9**				
81	Owl: Downtown Seattle	Loyal Hghts	Ballard					18.5	**3.4**
82	Owl: Downtown Seattle	Greenwood	Queen Anne, Greenlake					19.7	8.4
83	Owl: Maple Leaf	Downtown Seattle	U District					24.3	9.8
84	Owl: Downtown Seattle	Madison Park	Madrona					**7.7**	**2.2**
85	Owl: Downtown Seattle	White Center	West Seattle					**17.5**	8.8
99	Intl Dist	Waterfront	Jackson	32.0	**7.4**	**21.1**	**5.1**		
101	Renton	Downtown Seattle	I-5 – ML King Jr Way	32.5	17.3	38.8	20.5	28.1	15.5
102	Renton/Fairwood	Downtown Seattle	Tukwila, I-5	29.0	16.7				
106	Renton	Downtown Seattle	S Beacon Hill, Georgetown	31.7	10.0	30.1	12.1	19.9	8.2
111	Renton	Downtown Seattle	I-90	20.8	12.8				
113	Shorewood	Downtown Seattle	White Center, SR-509	25.6	10.8				
114	Renton	Downtown Seattle	I-90	**17.8**	10.4				
116EX	Fauntleroy	Downtown Seattle	SODO	**12.4**	**5.3**				
118EX	Downtown Seattle	Vashon Heights, Tahlequah	SODO	**13.7**	**5.7**				
119EX	Downtown Seattle	Vashon Heights, Dockton	SODO	**13.0**	**7.2**				
120	Burien	Downtown Seattle	White Center, Delridge	44.3	17.4	47.2	21.9	36.2	16.6
121	Des Moines	Downtown Seattle	Burien	25.2	10.4	**21.6**	**9.3**		
122	Highline CC	Downtown Seattle	Normandy Park, Burien	25.9	11.4				
123EX	Burien	Downtown Seattle	SR-509	**15.2**	**7.5**				
124	SeaTac	Downtown Seattle	Marginal Way S	39.0	16.1	36.3	17.3	22.4	9.5
125	Shorewood	Downtown Seattle	SSCC	36.2	12.3	33.6	13.4	**17.6**	7.1
131	Midway/Des Moines	Downtown Seattle	Burien	20.3	8.0	**20.0**	9.8	**14.6**	6.8
132	Highline CC	Downtown Seattle	Burien	26.2	10.9	**27.6**	12.9	**12.4**	6.0
133	U District	Burien	White Center	**17.3**	10.5				
134	Burien	Downtown Seattle	Georgetown	**10.6**	**4.1**				
143EX	Maple Valley	Downtown Seattle	Renton	19.8	11.7				
150	Kent via Tukwila	Downtown Seattle	I-5	29.1	17.1	30.7	20.7	24.5	16.6
152	Auburn	Downtown Seattle	I-5	**13.2**	10.1				
157	Lake Meridian P&R	Downtown Seattle	I-5	**11.5**	**7.1**				
158	Lake Meridian	Downtown Seattle	Kent	19.3	12.9				
159	Timberlane	Downtown Seattle	Kent	**15.6**	9.9				
161	Kent East Hill	Downtown Seattle	Tukwila	**15.2**	**7.5**				
162	Kent	Downtown Seattle	Tukwila	**15.1**	8.7				

KEY: Spring 2011 threshold values for routes that serve the Seattle core	Top 25%	42.0	12.9	52.6	15.2	32.0	8.4
	Bottom 25%	**18.6**	**7.9**	**29.4**	**9.8**	**17.7**	**5.8**

				Peak		Off-peak		Night	
Route	Between	And	Via	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile	Rides/ Platform hour	Passenger miles/ Platform mile
167	S Renton P&R	U District	Bellevue	22.3	16.7				
175	W Federal Way	Downtown Seattle	Midway	**11.4**	**7.0**				
177	Federal Way	Downtown Seattle	I-5	**18.4**	11.6				
179	Twin Lakes P&R	Downtown Seattle	Federal Way- I-5	**18.1**	13.4				
190	Star Lake via I-5	Downtown Seattle	I-5	**17.9**	9.4				
192	Star Lake P&R	Downtown Seattle	Kent-Des Moines P&R	**15.6**	**7.8**				
193EX	Star lake via I-5	First Hill	Kent-Des Moines P&R	25.2	14.1				
196	S Federal Way	Downtown Seattle	I-5	**13.2**	9.1				
197	Federal Way	U District	Kent-Des Moines P&R	**17.1**	12.0				
202	Mercer Island	Downtown Seattle	I-90	**12.3**	**4.4**				
205EX	Mercer Island	U District	First HIll	**17.4**	**5.2**				
210	Issaquah	Downtown Seattle	Factoria	**10.7**	**5.0**				
211EX	Issaquah Hghlnds P&R	First Hill	Eastgate	**16.9**	**4.8**				
212	Eastgate P&R	Downtown Seattle	I-90	36.7	15.8				
214TB	Issaquah	Downtown Seattle	I-90	20.0	9.0				
215	Snoqualmie	Downtown Seattle	I-90	19.7	11.1				
216	Sahalee	Downtown Seattle	Sammamish, Issaquah	21.2	13.9				
217	Issaquah	Downtown Seattle	Eastgate	30.4	16.0				
218	Issaquah Hghlnds P&R	Downtown Seattle	I-90	37.6	20.8				
225	Overlake	Downtown Seattle	164th Ave SE, I-90	24.5	12.4				
229	Overlake	Downtown Seattle	156th Ave SE and I-90	27.2	14.3				
243	Jackson Park	Wilburton P&R	Bellevue Trnst Cntr	24.2	8.9				
250	Overlake	Downtown Seattle	SR-520	**9.2**	**4.5**				
252	Kingsgate	Downtown Seattle	SR-520 – I-405	21.4	12.5				
255	Brickyard P&R	Downtown Seattle	Kirkland	27.0	14.7	**20.5**	12.1	**17.5**	11.8
256	Overlake Trnst Cntr	Downtown Seattle	SR-520	**17.9**	9.4				
257	Brickyard P&R	Downtown Seattle	I-5–SR-520–I-405	**18.5**	11.4				
260	Finn Hill	Downtown Seattle	I-5–SR-520–I-405	**12.5**	7.9				
261	Overlake	Downtown Seattle	Crossroads, Bellevue	**17.2**	**7.2**				
265	Overlake	First Hill	Rose Hill, downtown Seattle	**11.0**	**5.6**				
266	Redmond	Downtown Seattle	148th Ave NE, SR-520	**13.5**	**7.1**				
268	Bear Creek	Downtown Seattle	I-5–SR-520	**16.8**	10.0				
271	U District	Issaquah	Bellevue	23.3	10.0	**26.7**	13.6	**16.9**	7.9
272	Eastgate via	U District	Houghton P&R	**14.3**	**6.1**				
277	Juanita	U District	Kingsgate & Houghton P&R	**13.0**	**5.1**				
280*	Owl: Downtown Seattle	Renton	Bellevue					**9.8**	
301	Richmond Beach	Downtown Seattle	Shoreline	34.8	20.3				
303EX	Shoreline	First Hill	I-5	36.7	14.8				

KEY: Spring 2011 threshold values for routes that serve the Seattle core	Top 25%	42.0	12.9	52.6	15.2	32.0	8.4
	Bottom 25%	**18.6**	**7.9**	**29.4**	**9.8**	**17.7**	**5.8**

				Peak		Off-peak		Night	
Route	**Between**	**And**	**Via**	**Rides/ Platform hour**	**Passenger miles/ Platform mile**	**Rides/ Platform hour**	**Passenger miles/ Platform mile**	**Rides/ Platform hour**	**Passenger miles/ Platform mile**
304	Richmond Beach	Downtown Seattle	I-5	23.3	14.6				
306EX	Kenmore P&R	Downtown Seattle	Lake City	26.8	13.5				
308	Horizon View	Downtown Seattle	NE 45th St	21.6	11.4				
309EX	Kenmore	First Hill	Lake Forest Park, Lake City	21.6	9.2				
311	Duvall	Downtown Seattle	I-5–SR-520 – I-405	**15.1**	10.4				
312EX	Bothell	Downtown Seattle	Kenmore	25.0	11.8				
316	Aurora Village Trnst Cntr	Downtown Seattle	Green Lake	41.8	12.9				
355EX	Shoreline CC	Downtown Seattle	Bitter Lake, Greenwood	24.1	9.8				
358EX	Aurora Village	Downtown Seattle	Green Lake	48.6	19.5	51.7	26.5	36.0	17.7
372EX	U District	Woodinville	Kenmore	32.5	11.2	38.5	14.1	26.4	6.6
373EX	Aurora Village Trnst Cntr	U District	Jackson Park	32.1	12.7				
600	South Base Tukwila	Downtown Seattle	S Boeing Access Rd	**11.5**	**1.9**				
661	NE 145th	Downtown Seattle	I-5			**5.2**	**3.7**		

KEY: Spring 2011 threshold values for routes that serve the Seattle core	Top 25%	42.0	12.9	52.6	15.2	32.0	8.4
	Bottom 25%	**18.6**	**7.9**	**29.4**	**9.8**	**17.7**	**5.8**

SECTION 3

SERVICE QUALITY ANALYSIS

Passenger loads

Following the guidelines, we measured passenger loads by comparing the maximum number of riders on a bus during a trip with the number of seats on the bus. The ratio of riders to seats is called "load factor." A trip is defined as overloaded if the average of the maximum load factor is greater than 1.25 or 1.5, depending on service frequency; or if the average maximum load factor is greater than 1.0 for longer than 20 minutes. This measure is designed to identify trips that are significantly and continually overloaded.

For weekdays, we calculated average trip ridership for fall 2010 and spring 2011. For weekends, we averaged trip ridership for fall 2009, spring 2010, fall 2010, and spring 2011. We averaged trip ridership to make sure we used enough data from automatic passenger counters about a specific trip to get an accurate measurement of loads. Our analysis identified the routes listed in the table below as having one or more trips that exceeded the service guidelines' passenger-load threshold during the periods shown.

RESULTS

Based on our analysis, we estimate that about 7,700 annual service hours are needed to address existing overcrowding problems through addition of new trips. Other actions might be considered as well, such as assigning bigger buses to reduce crowding or changing the schedule to keep buses on time.

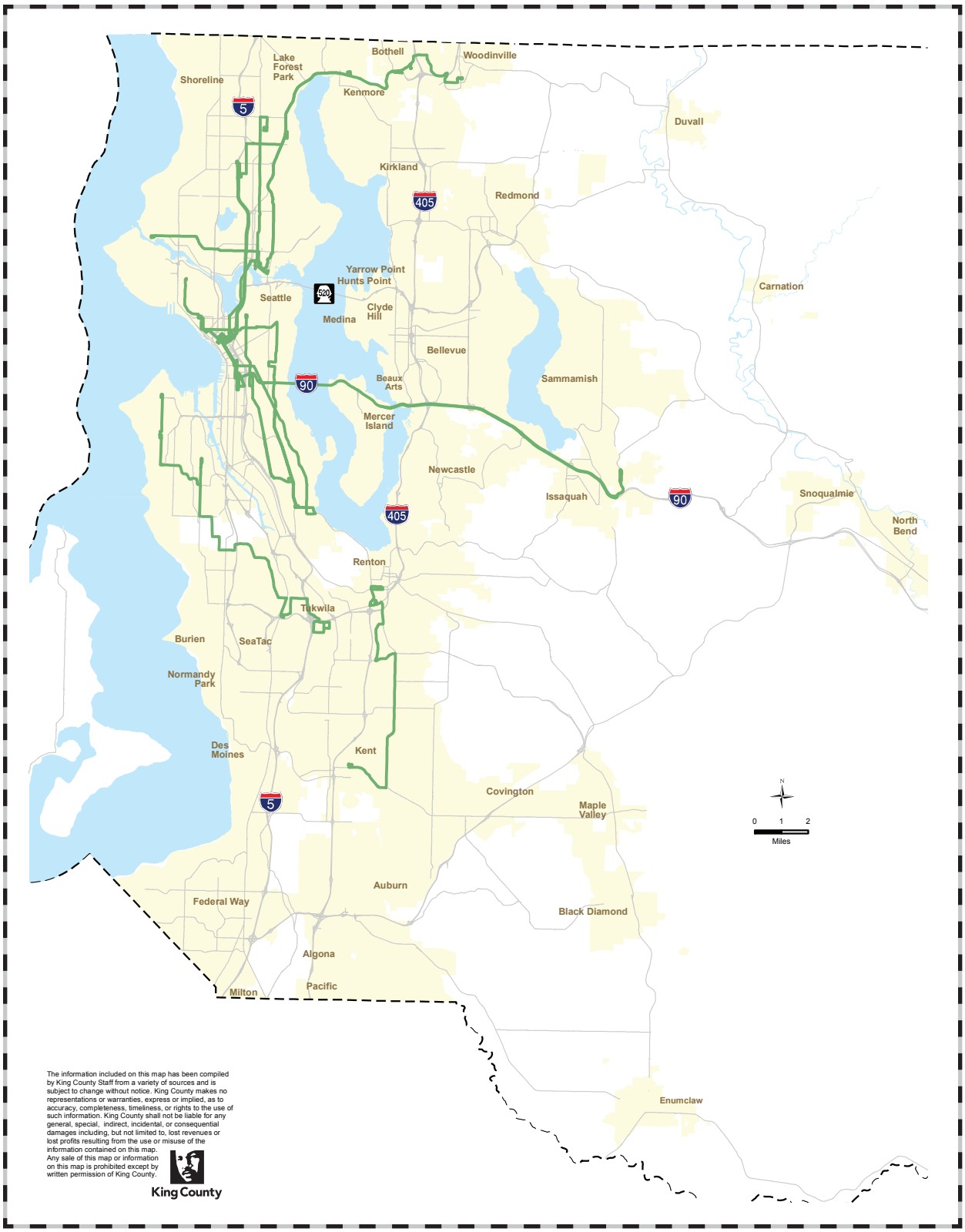
Routes Exceeding Passenger Load Threshold

Route	Between	And	Via	Day	Estimate cost (annual hours)
1	Kinnear	Downtown Seattle		Weekday	300
8	Rainier Beach	Queen Anne	Capitol Hill	Weekday	400
9	Rainier Beach	Capitol Hill		Weekday	400
36	Othello Station	Downtown Seattle	Beacon Hill	Sunday	300
41	Northgate	Downtown Seattle	I-5	Weekday	400
44	Ballard	University District	Wallingford	Weekday	1,300
73	Jackson Park	Downtown Seattle	University District	Sunday	1,900
128	Southcenter	Admiral District	Alaska Junction and White Center	Weekday	1,000
169	Renton	Kent	Kent East Hill	Weekday	400
218	Issaquah Highlands P&R	Downtown Seattle		Weekday	500
372	University District	Woodinville		Weekday	800
				Total	7,700

Source: Fall 2009-Spring 2011

FIG. 8

Routes with Overcrowding, Spring 2011



Schedule reliability

We measured reliability by identifying trips as on-time or late. A trip is considered late if it arrives at any time point along its route more than five minutes after the scheduled time. The service guidelines do not consider early trips when identifying schedule reliability problems; they address only late operation because those reliability problems are more likely to require investment to fix.

The guidelines suggest that we consider investing more service hours in routes to improve their reliability if they are late more than 20 percent of the time on an average weekday or weekend, or more than 35 percent of the time in the weekday PM peak period. The threshold is lower for the PM peak because of the high variability of travel times and heavy congestion during that period.

Our analysis identified the routes listed in the table below as failing the reliability guideline in at least one time period, based on travel-time data from September 2010 to August 2011. We estimate that about 32,500 annual service hours are needed to address reliability problems by adding travel time or changing schedules of these routes.

There are other ways to improve the percentage of trips that are on time, including giving buses priority through special traffic signals or dedicated lanes (e.g. HOV or BAT lanes).

Transit priority or road changes require planning and cooperation with the many cities that Metro serves. Seeking transit priority on roadways is a long-term strategy for improving reliability but does not avoid the need to invest in poor performing routes at present. Another way to improve reliability is to reduce the number of routes that are through-routed, where one route continues as a different route without any time or pause in between. While through-routing is efficient in saving hours and making use of limited road and bus-stop space, it can make service unreliable because any delays experienced on one route are carried over to the next route.

Routes Failing Reliability Threshold, September 2010-August 2011

(% of late trips is listed only for the time periods that a route is failing)

N/A = No service on this route during that time period

Route	Between	And	Via	Weekday % late	PM Peak % late	Saturday % late	Sunday % late
2	Queen Anne	Downtown Seattle	Queen Anne Ave N	-	-	20%	-
5	Greenwood	Downtown Seattle	Aurora Ave N, Phinney	-	-	32%	25%
7	Rainier Beach	Downtown Seattle	Rainier Ave	23%	-	-	-
8	Rainier Beach	Queen Anne	Capitol Hill	25%	43%	21%	22%
15	Blue Ridge	Downtown Seattle	Ballard	23%	39%	23%	-
16	Northgate	Downtown Seattle	Greenlake	33%	48%	34%	28%
17	Loyal Heights	Downtown Seattle	Ballard, South Lake Union	-	36%	25%	22%
18	North Beach	Downtown Seattle	Ballard, Uptown	22%	41%	22%	-
21EX	Arbor Heights	Downtown Seattle		-	38%	N/A	N/A
21	Arbor Heights	Downtown Seattle	35th Ave SW, Alaskan Wy Viaduct	24%	43%	21%	-
22	White Center	Downtown Seattle	Alaska Junction, SODO	31%	49%	22%	-
23	White Center	Downtown Seattle	Highland Park Wy	28%	-	30%	24%
24	Magnolia	Downtown Seattle	Viewmont Way–Elliott	-	-	30%	-
26	Wallingford	Downtown Seattle	Fremont	-	-	21%	-
27	Colman Park	Downtown Seattle	Yesler	22%	-	23%	-
28	Broadview	Downtown Seattle	Fremont	30%	36%	29%	31%
30	Sand Point	Queen Anne	University District	23%	38%	-	-

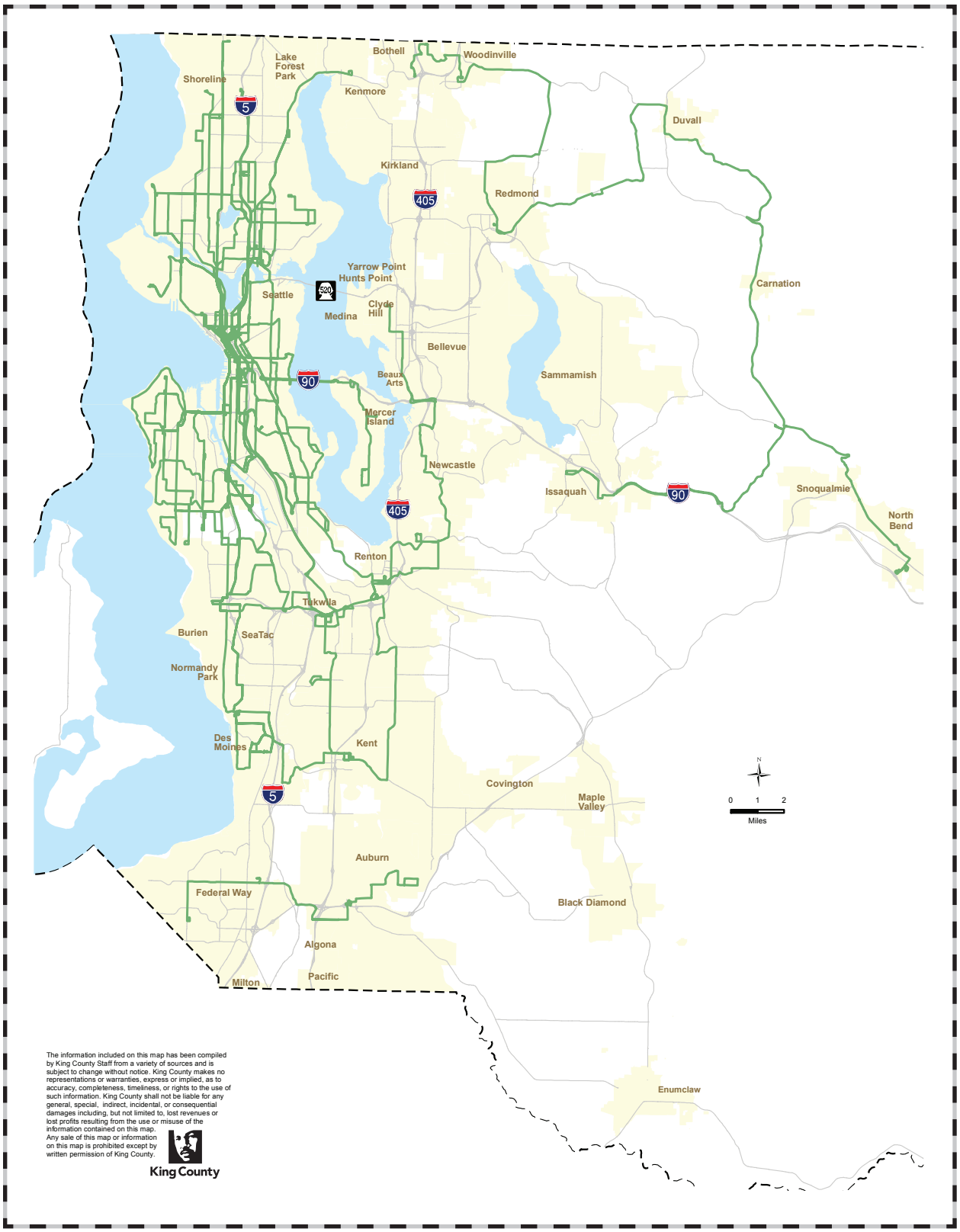
Route	Between	And	Via	Weekday % late	PM Peak % late	Saturday % late	Sunday % late
31	Magnolia	University District	Fremont	20%	-	22%	N/A
33	Magnolia	Downtown Seattle	Elliott Ave W	21%	-	-	-
37	Alaska Junction	Downtown Seattle	Alki, Beach Drive	35%	42%	N/A	N/A
38	Rainier Ave	Beacon Ave	S. McClellan	48%		24%	N/A
39	Rainier Beach	Downtown Seattle	Seward Park, Beacon Hill	28%	38%	26%	22%
43	University District	Downtown Seattle	Capitol Hill	-	-	21%	-
48	Loyal Heights	University District	Greenlake	-	-	28%	-
49	University District	Downtown Seattle	Capitol Hill, Broadway	22%	-	-	-
54EX	Fauntleroy	Downtown Seattle	Alaskan Way Viaduct	27%	36%	N/A	N/A
54	White Center	Downtown Seattle	Fauntleroy	22%	38%	28%	22%
55	Admiral District	Downtown Seattle	California Ave–Alaskan Way Viaduct	-	35%	26%	-
57	Alaska Junction	Downtown Seattle	Admiral Way	36%	58%	N/A	N/A
60	Broadway	White Center	Georgetown Beacon Hill	27%	-	23%	-
66EX	Northgate	Downtown Seattle	Roosevelt District, Eastlake	21%	-	-	-
68	Northgate	University District	Roosevelt	26%	-	27%	N/A
71	Wedgwood	University District	Latona	24%	N/A	-	-
72	Lake City	Downtown Seattle	Ravenna		N/A	20%	-
81	Downtown Seattle	Loyal Heights	Ballard	24%	N/A	29%	28%
105	Renton Highlands	Renton	Renton Technical College	24%	-	-	-
106	Renton	Downtown Seattle	S Beacon Hill, Georgetown	22%	-	-	-
113	Shorewood	Downtown Seattle	White Center, SR-509	-	41%	N/A	N/A
119EX	Vashon/Dockton	Downtown Seattle	SODO	21%	-	N/A	N/A
120	Burien	Downtown Seattle	White Center	-	-	21%	21%
121	Des Moines	Downtown Seattle	Burien	20%	-	N/A	N/A
122	Highline CC	Downtown Seattle	Normandy Park, Burien	21%	-	N/A	N/A
124	SeaTac	Downtown Seattle	Marginal Way S	-	-	22%	-
125	Shorewood	Downtown Seattle	SSCC	31%	46%	20%	21%
128	Southcenter	Admiral District	White Center	30%	42%	21%	-
131	Midway/ DesMoines	Downtown Seattle	Burien	23%	-	34%	-
132	Burien	Downtown Seattle	Burien	22%	-	33%	-
150	Kent	Downtown Seattle	I-5	-	-	-	21%
166	Des Moines	Kent	Highline Community College	24%	-	-	-
169	Renton	Kent	Canyon Dr, 104th/108th Ave SE	25%	-	-	-
181	Federal Way	Auburn	SW 320 St-Peasley Canyon Rd	22%	-	-	-
182	Federal Way	Twin Lakes	Federal Way Transit Center-Auburn Station	21%	-	-	-
187	Twin Lakes	Federal Way	S 320th St	23%	35%	-	-
205EX	Mercer Island	University District	First Hill	20%	-	N/A	N/A
209	North Bend	Issaquah	I-90	-	-	27%	N/A
222	Bellevue	Eastgate	Beaux Arts, Factoria	23%	-	-	-

Route	Between	And	Via	Weekday % late	PM Peak % late	Saturday % late	Sunday % late
224	Redmond	Fall City	Duvall, Stillwater, Carnation	57%	67%	N/A	N/A
233	Bellevue	Bear Creek	Overlake	32%	43%	-	N/A
240	Bellevue	Renton	Newcastle, Factoria, Eastgate	21%	-	23%	-
247	Kent, Renton	Overlake	Eastgate	22%	49%	N/A	N/A
251	Bothell	Redmond	Woodinville	27%	35%	-	N/A
255	Brickyard P&R	Downtown Seattle	Kirkland	-	-	23%	-
280	Bellevue	Seattle	Renton	-	N/A	27%	-
309EX	Kenmore	First Hill	Lake Forest Park, Lake City	35%	56%	N/A	N/A
311	Duvall	Downtown Seattle	I-5, SR-520, I-405	20%	-	N/A	N/A
330	Shoreline	Lake City	Fircrest	21%	-	N/A	N/A
358EX	Aurora Village Transit Center	Downtown Seattle	Greenlake	29%	41%	-	-
373EX	Aurora Village Transit Center	University District	Jackson Park	22%	35%	N/A	N/A

In 2010 and 2011, we improved the efficiency of schedules by reducing the amount of recovery time relative to time picking up passengers. While this effort has saved money and brought Metro's schedule efficiency closer to that of its peers, it has also caused reliability to drop, because when a bus is running late it has less time to recover before the next trip. Any investments to improve reliability will be made with a goal of maintaining efficient schedules, but the addition of time to schedules may affect schedule efficiency.

FIG. 9

Routes with Poor On-Time Performance, Spring 2011



SECTION 4

THE GUIDELINES AT WORK

The RapidRide B Line and fall 2011 Eastside restructures

Several recent and planned transit investments prompted Metro to restructure service on the Eastside in fall 2011. The federal Urban Partnership Program gave Metro an opportunity to add cross-lake transit service to accommodate increased transit demand caused by tolling on the SR-520 Bridge. Sound Transit and Metro had built the Redmond Transit Center. Metro was planning to launch the RapidRide B Line in September. Sound Transit had expanded Overlake Transit Center and improved service on Route 545, and Metro had added layover space at Eastgate Park-and-Ride.

To make the best use of these opportunities and investments, we began in 2010 to plan a restructure of Metro service connecting Bellevue, Redmond, Kirkland, Overlake, Totem Lake, and Eastgate, conducting an extensive public outreach process called Bellevue and Redmond Connections.

Although the service guidelines were still under development, our planning was consistent with them in a number of ways. The guidelines define significant service investment as a trigger for restructuring service. They set priorities such as improving service quality, and define service design principles such as reducing duplication of service.

The following examples from the Eastside restructuring project illustrate how the guidelines can work and the results they can achieve.

Service quality

The top priority in the service guidelines is to improve service quality by reducing over-crowding and improving schedule reliability. The Eastside restructuring project allowed Metro to address service quality issues that we had identified using the service guidelines, as shown in the table below.

Geographic value and social equity in the Eastside restructure

- The Eastside restructure connects the regional growth and jobs centers of Bellevue, Overlake Redmond, downtown Seattle, Totem Lake, and the University District with 15-minute all-day service.
- The B Line serves the diverse and low-income Crossroads transit activity center, providing all-day service that connects historically disadvantaged populations to regional growth, job and other activity centers important to people who rely on transit for all their mobility needs.
- Design principles used in the restructure resulted in more frequent, direct and reliable transit service that moves people between the Eastside and regional areas where most daily activities take place.

Routes with Service Quality Issues

Route	Between	And	Via	Change
222	Bellevue	Eastgate	104th Ave SE	Streamlined new Route 241 Revised Route 249
233	Bellevue	Redmond	NE Bellevue Redmond Road	Replaced in part with B Line

The B Line

The start of the RapidRide B Line moved the All-Day and Peak Network closer to the goal of high-quality, productive service for the Eastside. The B Line delivers geographic value by providing frequent connections to the regional growth and jobs centers of Bellevue, Overlake and Redmond with very frequent service. The B Line contributes to social equity by serving the diverse and low-income Crossroads transit activity center. As an all-day service it supports traditional and non-traditional work hours as well as travel for shopping and recreation—especially important for those who rely solely on transit for their mobility.

The B Line is also an example of how the guidelines can help Metro enhance existing services that are already productive. The B Line basically consolidated three top-performing routes on the Eastside. The combination of routes 230E, 233 and 253 into a single streamlined pattern resulted in improved network connections to services continuing to downtown Seattle, an easy-to-understand service design, and reduced duplication of service. These are all service-design principles that the guidelines suggest Metro consider when restructuring service. They have led to more frequent, direct and reliable transit service that moves people between the Eastside and regional activity centers.

Routes Converted to B Line

Route	Between	And	Via	Rides / Platform hour, Spring 2011		
				Peak	Off-peak	Night
230E	Redmond	Bellevue	Crossroads and Overlake	36.3	25.9	26.1
233	Bellevue	Bear Creek P&R	Overlake	23.0	22.2	13.5
253	Redmond	Bellevue	Overlake	32.5	36.4	31.6
				Top 25%		

The All-Day and Peak Network

The guidelines state that the goal of restructuring is to improve the efficiency and effectiveness of transit services. The Eastside restructuring project integrated the RapidRide B Line with a network of frequent services connecting regional growth and activity centers, and the result is more productive services.

The project added 15-minute all-day connections between the centers shown in the table below. These frequent all-day connections are the key to increasing Eastside transit ridership and service productivity. This change has also delivered geographic value by providing high-quality connections among Eastside centers.

New/Improved 15-Minute All-Day Connections on Eastside

Regional Growth Centers	Activity Centers	Route(s)
Totem Lake – Downtown Seattle	Kirkland – Juanita	255
Overlake	Kirkland – Crossroads – Eastgate – Factoria	245
University District – Bellevue	Eastgate – Factoria	271
Bellevue – Overlake – Redmond	Crossroads	B Line
Bellevue	Kirkland	234/235

Providing target levels of service on underserved corridors

The improvement of service on the B Line and Route 271 allowed us to meet or move towards target service levels for two corridors. The table on the next page shows the improvements in two underserved corridors on the Eastside.

Improving Underserved Eastside Corridors

Corridor	Target level of service compared to level of service before restructure			Level of service after restructure		
	Peak	Off-peak	Night	Peak	Off-peak	Night
Bellevue to Redmond via NE 8th St, 156th Ave NE (B Line)	< 15 min	15	15	< 15 min	15 min	15
University District to Bellevue via SR-520 (Route 271)	< 15 min	< 15 min	30	< 15 min	< 15 min	30
	Underserved			Underserved		

Before the fall 2011 change, transit service in the corridor connecting Bellevue and Redmond via NE Eighth Street was provided by various routes. The corridor was underserved in the peak and night periods. With the start of the B Line, the Bellevue-Redmond corridor now meets the target service levels for all periods.

The peak and off-peak (midday) target service level for the corridor between the University District and Bellevue via SR-520 is better than 15 minutes. The B Line restructure boosted the peak service to better than 15 minutes and improved the off-peak frequency of Route 271 from 30 minutes to every 15 minutes. These improvements moved service in the University District-to-Bellevue corridor towards the guidelines-based target level of service, and are consistent with the priority the guidelines place on connections between regional growth centers.

Reducing duplication

The Eastside restructure consolidated service in the B Line corridor and deleted several peak-period routes that overlapped with routes providing service in both directions all day, shown in the table below. Some of these routes were also performing poorly before the restructure, so deleting them allowed the hours from those routes to be reinvested in more productive services. These restructures reduced duplication of services connecting downtown Seattle with Eastgate, Kirkland, Overlake, and Redmond.

Peak Routes Deleted Due to Duplication

Route	Between	And	Via	All day route or alternative route
255	Overlake Transit Center	Downtown Seattle	164th Ave SE, Eastgate and I-90	212
229	Overlake Transit Center	Downtown Seattle	156th Ave SE, Eastgate and I-90	212
266	Redmond	Downtown Seattle	148th Ave NE and SR-520	250/268/545

Before the restructure, routes 225 and 229 both duplicated service provided by other routes, including Route 212 between Eastgate Park-and-Ride and downtown Seattle. This service design divided the transit demand between Eastgate and downtown Seattle among three different routes. Long sections of routes 225 and 229 served neighborhood "tails" where there were relatively few riders compared to the riders traveling between Eastgate and downtown Seattle. We deleted the two routes, added trips to Route 212 to accommodate the riders using the routes between Eastgate and downtown Seattle, and added different routes to serve the neighborhoods north of Eastgate in a new way. The consolidation of these routes into a single all-day route maintains the needed peak-period capacity while eliminating the competition and the potential confusion for riders. Even though neither of the deleted routes was among the bottom 25 percent on the guidelines performance measures, their replacement is consistent with the guidelines.

Before the restructure, routes 250, 265 and 266 all traveled between Redmond and downtown Seattle via SR-520. All three routes were in the bottom 25 percent of routes serving the Seattle core on both performance measures. We consolidated these three routes into two routes, eliminating Route 266 and revising routes 250 and 265 to travel between Overlake Transit Center and downtown Seattle via SR-520. This consolidation should help improve the productivity of revised routes 250 and 265, making them more competitive with other routes serving the Seattle core.

Revising and reducing low-productivity services

The guidelines help us identify services that could potentially be revised or reinvested to meet other needs. The Eastside restructuring project involved a number of reinvestments from services that were performing poorly to those that served areas or populations with greater needs. As described earlier, several low-performing peak-only services were consolidated into other services. Other ways we addressed low-performing services in this restructure included revising some low-performing routes to serve new destinations and reducing other routes.

Revised Route

Route	Between	And	Change
211	Eastgate	Downtown Seattle	Extended to Issaquah Highlands, a new activity center connection

As part of a service partnership, Route 211 between Eastgate and downtown Seattle was extended from Eastgate to Issaquah Highlands to connect more places.

Eliminated Route

Route	Between	And	Via	Alternate/revised routes
247	Overlake	Kent/Boeing	148th Ave NE and I-405	153/566/913

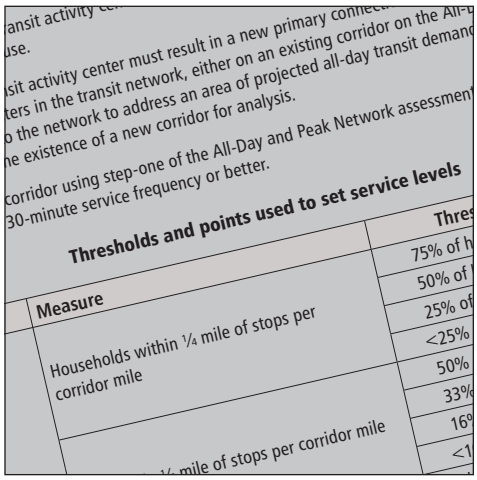
Routes 247 and 926 were among the bottom 25 percent of routes not serving the Seattle core on both performance measures. Route 247 connected Overlake and Kent Boeing, and overlapped all-day Sound Transit Route 566 between Overlake and Kent Transit Center. We deleted Route 247 while revising Route 913, serving Kent Transit Center, to ensure that people could still connect to Kent Boeing by using Route 566 from Overlake to Kent Transit Center and Route 913 between Kent Transit Center and Kent Boeing.

These types of service consolidations that combine the transit demand of low-performing services with the demand of larger transit markets are supported in the guidelines concerning productivity and service design.

The examples of changes to low-performing routes during the Eastside restructuring project show that low performance can prompt many different kinds of action. Where routes provide service to historically disadvantaged populations or important connections to transit activity centers, they may be revised or consolidated to continue meeting those needs while combining markets or eliminating unproductive sections of routes. Where services largely duplicate or compete for riders, low-performing services can be removed to increase the productivity of remaining services. Where low-performing services can be revised to make the service more frequent or faster or serve a larger market, the guidelines encourage Metro to pursue those actions.

SECTION 5

POTENTIAL CHANGES TO THE SERVICE GUIDELINES AND STRATEGIC PLAN



ansit activity ce
use.

sit activity center must result in a new primary connec
ters in the transit network, either on an existing corridor on the All-D
o the network to address an area of projected all-day transit demand
he existence of a new corridor for analysis.

corridor using step-one of the All-Day and Peak Network assessment
30-minute service frequency or better.

Thresholds and points used to set service levels

Measure	Thres
Households within ¼ mile of stops per corridor mile	75% of h 50% of 25% of <25%
¼ mile of stops per corridor mile	50% 33% 16% <1

Metro has begun to incorporate the principles and practices in our strategic plan and service guidelines into our service planning. We have not yet had the opportunity to assess the impact of the guidelines. As a result, it is still too early to propose changes to the guidelines or strategic plan. Over the next year, we will assess whether the use of the guidelines has helped lead us in the direction we anticipated. We have identified some preliminary areas that we will continue to monitor and review for potential changes in the future. We will consider the following issues along with updates to our strategic plan in 2013:

Refine corridor definition. The guidelines define a network of key transit corridors connecting centers and other transit activity areas. To maintain a clear distinction between corridors and the routes that serve them, and to allow consistent corridor monitoring as we manage a dynamic and evolving service network, we may need to consider ways to clarify and refine the processes of defining and evaluating the corridors.

Refine methodologies. We may need to continue refining the methods and measures for tracking and evaluating both corridor and route performance. We will strive to apply the best available tools to effectively manage our system and to align our evaluation processes with the best available data.

Clarify. We may need to continue clarifying terms and practices that are part of the guidelines analysis. We will also clarify how the corridor and route analyses work together and inform service planning and implementation.

APPENDICES

A MAP OF LOW INCOME AND MINORITY CENSUS TRACTS IN KING COUNTY A-2

B MAP OF ACTIVITY CENTERS A-3

C PEAK CORRIDOR ANALYSIS RESULTS A-4

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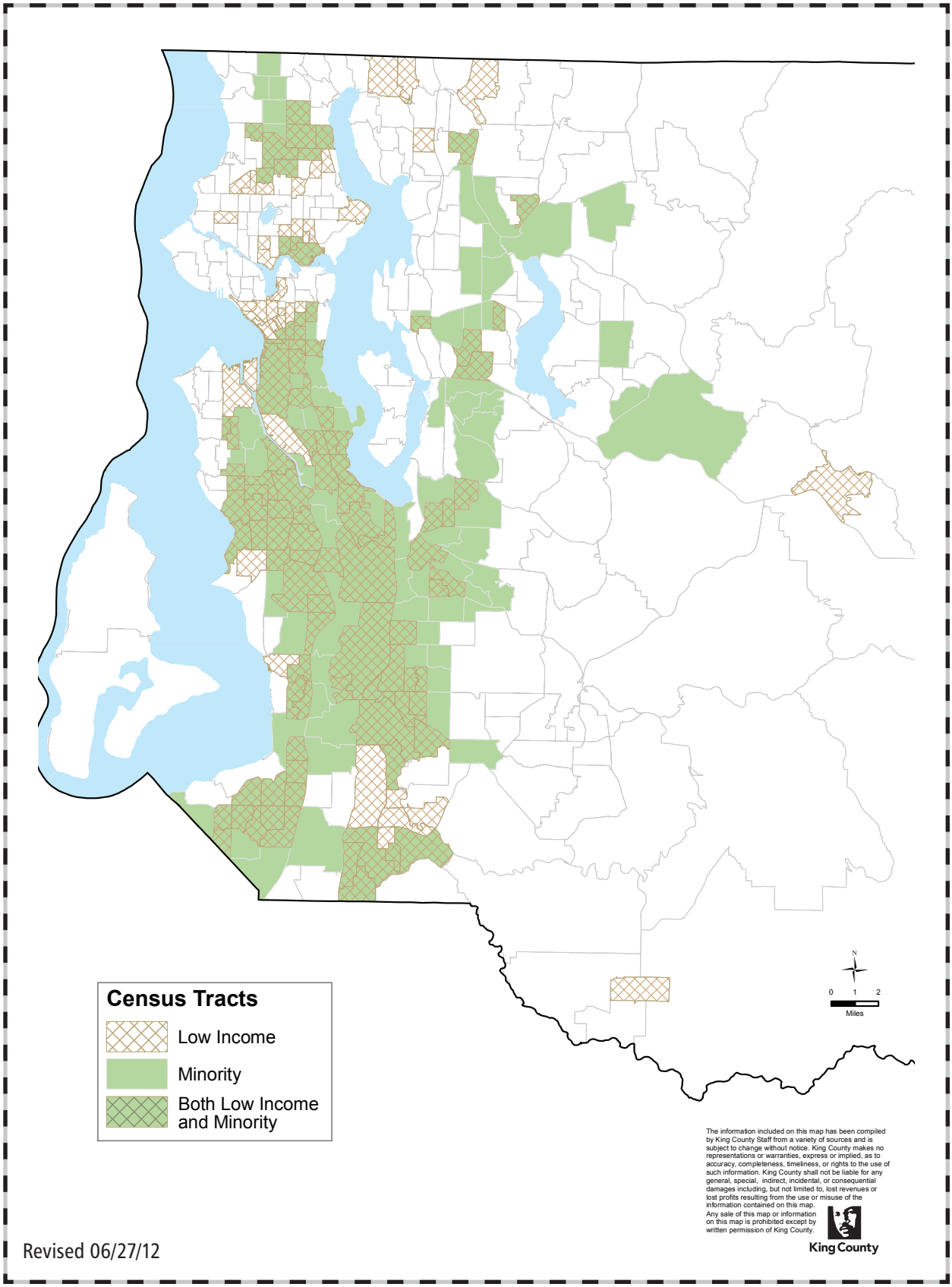
G MASTER CORRIDOR TABLE A-11

Note: the tables in Appendix G are formatted to fit 11" x 17" (tabloid) size paper. If you have difficulty printing these pages and wish to view them online, visit http://metro.kingcounty.gov/planning/

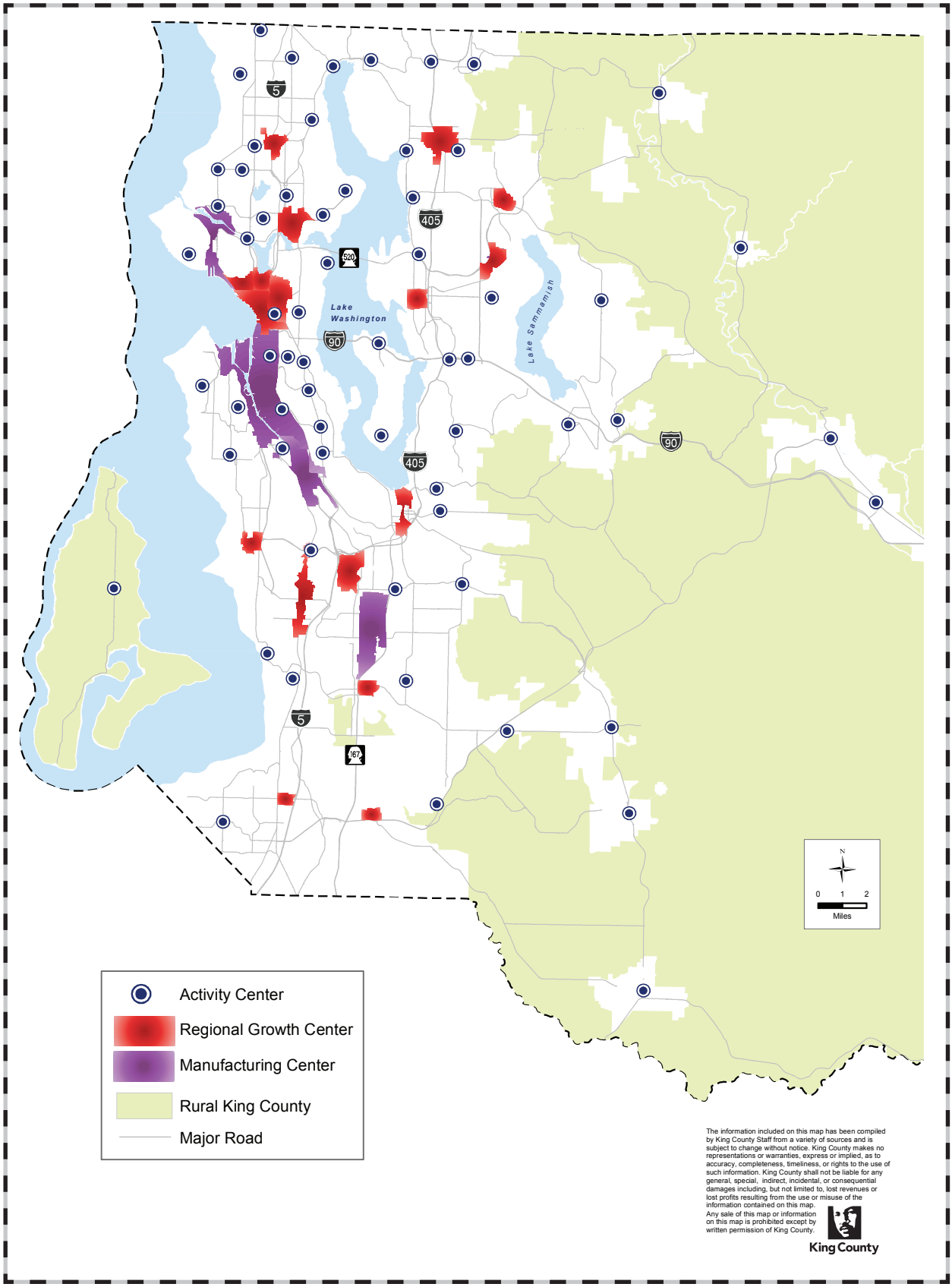
APPENDIX A:

King County Low Income and Minority Census Tracts (2010 Geography)



APPENDIX B:

Map of Activity Centers



APPENDIX C:

Peak Corridor Analysis Results

Peak Route Performance Evaluation – Based on Spring 2011 Automatic Passenger Count Data and Scheduled Travel Times

Route	Between	And	Via	Ridership	Travel time
				≥ 90% of alternative	≥ 20% faster than alternative
2NEX	Queen Anne	Downtown Seattle	Uptown	Yes	No
5EX	Greenwood	Downtown Seattle	Greenwood Ave N	No	No
7EX	Rainier Beach	Downtown Seattle	Rainier Ave S	No	Yes
15EX	Crown Hill	Downtown Seattle	Ballard	Yes	No
17EX	Loyal Heights	Downtown Seattle	Ballard	Yes	Yes
18EX	Loyal Heights	Downtown Seattle	Ballard	Yes	No
19	Magnolia	Downtown Seattle	Elliott Ave W	No	Yes
21EX	Roxhill	Downtown Seattle	West Seattle	Yes	No
26EX	East Green Lake	Downtown Seattle	Wallingford	No	No
28EX	Broadview	Downtown Seattle	Whittier Heights	Yes	No
34EX	Rainier Beach	Downtown Seattle	Seward Park	Yes	No
35	Harbor Island	Downtown Seattle	4th Ave S	Yes	Yes
37EX	Alaska Junction	Downtown Seattle	Alki	Yes	Yes
45EX	Queen Anne	University District	Wallingford	No	Yes
46	Shilshole	University District	Fremont	No	No
48NEX	Loyal Heights	University District	Greenwood	Yes	No
54EX	Fauntleroy	Downtown Seattle	Fauntleroy Way SW	Yes	Yes
57	Alaska Junction	Downtown Seattle	Admiral District	No	Yes
64EX	Lake City	First Hill	Wedgwood	No	Yes
74EX	Sandpoint	Downtown Seattle	University District	Yes	No
76	Wedgwood	Downtown Seattle	View Ridge	Yes	No
77EX	North City	Downtown Seattle	Maple Leaf	Yes	Yes
79EX	Lake City	Downtown Seattle	University District	Yes	No
102	Fairwood	Downtown Seattle	Renton	Yes	No
110	Southwest Renton	North Renton	Renton TC	No	Yes
111	Maplewood	Downtown Seattle	Lake Kathleen	Yes	Yes
113	Shorewood	Downtown Seattle	White Center	Yes	Yes
114	Renton Highlands	Downtown Seattle	Newport Hills	Yes	Yes
116EX	Fauntleroy	Downtown Seattle	Fauntleroy Way SW	No	No
118EX	Tahlequah	Downtown Seattle	Fauntleroy	Yes	No
119EX	Dockton	Downtown Seattle	Fauntleroy	Yes	No
121	Highline CC	Downtown Seattle	Burien	No	Yes
122	Highline CC	Downtown Seattle	Burien	No	Yes
123EX	Burien	Downtown Seattle	Gregory Heights	No	Yes
133	Burien	University District	White Center	No	Yes
143EX	Black Diamond	Downtown Seattle	Maple Valley	Yes	Yes
152	Auburn	Downtown Seattle	Star Lake	No	Yes
154	Tukwila	Federal Center South	Boeing Plant 2	Yes	Yes
157	Lake Meridian P&R	Downtown Seattle	Kent East Hill	Yes	Yes
158	Lake Meridian	Downtown Seattle	Kent Station	Yes	No
159	Timberlane	Downtown Seattle	Kent Station	Yes	No
161	Lake Meridian P&R	Downtown Seattle	Tukwila P&R	No	Yes
162	Kent Station	Downtown Seattle	Kent-Des Moines P&R	No	No
167	Renton	University District	I-405	Yes	Yes

Route	Between	And	Via	Ridership	Travel time
				≥ 90% of alternative	≥ 20% faster than alternative
173	Federal Way	Federal Center South	Midway	No	Yes
175	West Federal Way	Downtown Seattle	Midway	No	No
177	South Federal Way P&R	Downtown Seattle	I-5	No	No
179	Twin Lakes P&R	Downtown Seattle	Federal Way TC	No	No
190	Redondo Heights P&R	Downtown Seattle	Star Lake P&R	No	Yes
192	Star Lake P&R	Downtown Seattle	Kent-Des Moines P&R	No	Yes
193EX	Star Lake P&R	First Hill	Tukwila P&R	Yes	Yes
196	South Federal Way P&R	Downtown Seattle	I-5	No	Yes
197	Twin Lakes P&R	Downtown Seattle	Federal Way TC	No	Yes
202	Mercer Island	Downtown Seattle	I-90	No	No
205EX	Mercer Island	University District	First Hill	No	No
210	Issaquah	Downtown Seattle	Lakemont	No	No
211EX	Eastgate	First Hill	South Bellevue P&R	No	No
212	Eastgate	Downtown Seattle	I-90	Yes	Yes
214	Issaquah	Downtown Seattle	I-90	Yes	No
215	North Bend	Downtown Seattle	Snoqualmie	Yes	No
216	Bear Creek P&R	Downtown Seattle	Sammamish	No	No
217	Downtown Seattle	North Issaquah	Eastgate	Yes	No
218	Issaquah Highlands	Downtown Seattle	Eastgate	Yes	Yes
225	Overlake	Downtown Seattle	Eastgate	Yes	No
229	Overlake	Downtown Seattle	Eastgate	Yes	No
232	Redmond	Bellevue	Overlake	No	Yes
232	Duvall	Bellevue	Redmond	No	Yes
237	Woodinville	Downtown Seattle	Totem Lake	#N/A	Yes
242	Ridgecrest	Downtown Seattle	Northgate	No	Yes
243	Jackson Park	Bellevue	Lake City	Yes	Yes
244EX	Kenmore	Overlake	Kingsgate	Yes	Yes
250	Redmond	Downtown Seattle	Overlake	No	No
252	Kingsgate	Downtown Seattle	SR-520	No	Yes
257	Brickyard P&R	Downtown Seattle	Kingsgate	No	Yes
260	Juanita	Downtown Seattle	SR-520	No	Yes
265	Redmond	Downtown Seattle	Houghton P&R	No	Yes
268	Bear Creek P&R	Downtown Seattle	Overlake	No	Yes
272	Eastgate	University District	Crossroads	No	No
277	Juanita	University District	Kingsgate	Yes	No
301EX	Aurora Village TC	Downtown Seattle	Shoreline P&R	No	Yes
304	Richmond Beach	Downtown Seattle	I-5	No	Yes
306EX	Kenmore	Downtown Seattle	Lake City	Yes	No
308	Horizon View	Downtown Seattle	Lake City	No	Yes
311	Duvall	Downtown Seattle	Woodinville	No	Yes
312EX	Bothell	Downtown Seattle	Lake City	Yes	No
316	Meridian Park	Downtown Seattle	Green Lake	Yes	Yes
330	Lake City	Shoreline	Fircrest	Yes	Yes
342	Shoreline	Renton	Bellevue	#N/A	No
355EX	Shoreline	Downtown Seattle	Greenwood	No	No
373EX	Shoreline	University District	Maple Leaf	Yes	Yes
918DART	Kent Station	North Kent Industrial		Yes	Yes
930DART	Kingsgate	Redmond	Willows Road	No	No

APPENDIX D:

Routes with Poor Reliability (September 2010-August 2011)

Routes with Poor Reliability September 2010 – August 2011
(Routes that will receive reliability investments beginning in June 2012)

Route	All-day % late	PM % late	Weekday/ PM peak need	Saturday % late	Saturday need	Sunday % late	Sunday need	Total need
2	-	-	0	20%	100	-	0	100
5	-	-	0	32%	400	25%	100	500
7	23%	-	1,200	-	0	-	0	1,200
8	25%	43%	1,400	21%	100	22%	100	1,600
15	23%	39%	500	23%	100	-	0	600
16	33%	48%	2,300	34%	500	28%	300	3,100
17	-	36%	0	25%	100	22%	100	300
18	22%	41%	200	22%	100	-	0	300
21EX	-	38%	0	N/A	0	N/A	0	100
21	24%	43%	600	21%	100	-	0	700
22	31%	49%	900	22%	100	-	0	1,000
23	28%	-	600	30%	200	24%	100	900
24	-	-	0	30%	200	-	0	200
26	-	-	0	21%	100	-	0	100
27	22%	-	200	23%	100	15%	0	300
28	30%	36%	1,300	29%	200	31%	200	1,700
30	23%	38%	500	-	0	17%	0	500
31	20%	-	100	22%	100	N/A	0	200
33	21%	-	100	-	0	-	0	100
37	35%	42%	100	N/A	N/A	N/A	0	100
38	48%	18%	300	24%	100	N/A	0	400
39	28%	38%	700	26%	100	22%	100	900
43	-	-	0	21%	100	-	0	100
48	-	-	0	28%	400	-	0	400
49	22%	-	700	-	0	-	0	700
54EX	27%	36%	100	N/A	0	N/A	0	100
54	22%	38%	600	28%	100	22%	100	800
55	-	35%	100	26%	100	-	0	200
57	36%	58%	300	N/A	0	N/A	0	300
60	27%	-	1,300	23%	100	-	0	1,400
66EX	21%	-	200	-	0	-	0	200
68	26%	-	400	27%	100	N/A	0	500
71	24%	N/A	100	-	0	-	0	100
72	18%	N/A	0	20%	100	-	0	100
81	24%	N/A	100	29%	100	28%	100	300
105	24%	-	200	-	0	-	0	200
106	22%	-	300	-	0	-	0	300
113	-	41%	100	N/A	0	N/A	0	100
119EX	21%	-	100	N/A	0	N/A	0	100
120	-	-	0	21%	100	21%	100	200
121	20%	-	100	N/A	0	N/A	0	100

CONTINUED

Route	All-day % late	PM % late	Weekday/ PM peak need	Saturday % late	Saturday need	Sunday % late	Sunday need	Total need
122	21%	-	100	N/A	0	N/A	0	100
124	-	-	0	22%	100	15%	0	100
125	31%	46%	1,000	20%	100	21%	100	1,200
128	30%	42%	1,300	21%	100	-	0	1,400
131	23%	-	300	34%	200	-	0	500
132	22%	-	400	33%	200	-	0	600
150	-	-	0	-	0	21%	100	100
166	24%	-	400	-	0	-	0	400
169	25%	-	600	-	0	-	0	600
181	22%	-	200	-	0	-	0	200
182	21%	-	100	-	0	-	0	100
187	23%	35%	100	-	0	-	0	100
205EX	20%	-	100	N/A	0	N/A	0	100
209	-	-	0	27%	100	N/A	0	100
222	23%	-	200	-	0	-	0	200
224	57%	67%	900	N/A	0	N/A	0	900
233	32%	43%	700	-	0	N/A	0	700
240	21%	-	200	23%	100	-	0	300
247	22%	49%	100	N/A	0	N/A	0	100
251	27%	35%	400	-	0	N/A	0	400
255	-	-	0	23%	100	-	0	100
280	-	N/A	0	27%	100	-	0	100
309EX	35%	56%	200	N/A	0	N/A	0	200
311	20%	-	100	N/A	0	N/A	0	100
330	21%	-	100	N/A	0	N/A	0	100
358EX	29%	41%	2,500	-	0	-	0	2,500
373EX	22%	35%	100	N/A	0	N/A	0	100

"-" = Complies with Service Guidelines (i.e. Lateness is lower than established guidelines)

N/A = No service on this route during that time period

APPENDIX E:

2011 Service Changes

Implementation	Route	Description of Change	Type
February	255	Improve weekday service frequency between 116th Avenue NE and NE 128th Street in Kirkland and International District Station in both directions to provide 10-20 minute headways instead of every 30 minutes	Increased frequency
February	311	Add up to three morning trips and three evening trips during the peak hour	Additional trips
February	309	New peak hour service between Kenmore Park and Ride and First Hill with three morning and three afternoon trips	Additional trips
February	200	Extend route to Issaquah Highlands and Talus development; funded by the City of Issaquah, Port Blakeley, Timber Ridge at Talus and Talus Residential Association	Route extension
April	36 / 60	Bus stop consolidation: Closure of 28 bus stops out of 137 stops in the study area.	Bus stop consolidation
May	41 / 73	Bus stop consolidation: Closure of 41 bus stops out of 128 stops in the study area.	Bus stop consolidation
October	B Line	Implement RapidRide B Line: Bellevue to Redmond	New service
October	54	Improve service frequencies to every 15 minutes weekday and on Saturdays until 7pm	Add
October	156	All trips start and end at Andover Park; discontinue peak-only trips between Andover Park/Baker Blvd and Tukwila Sounder Station; replacement service on Route 140	Route extension
October	193	Extend all trips to begin/end at Federal Way Park and Ride; two new afternoon peak trips departing First Hill after 6pm and 7pm.	Route extension/ additional trips
October	211	Extend all trips to begin/end at Issaquah Highlands; two new morning and afternoon trips	Route extension/ additional trips
October	212 / 225 229	Delete 225/229; add trips to 212 between Eastgate Park and Ride and downtown Seattle; replacement service provided for 225 and 229 via revised 221 and B Line/226 for Route 229.	Deletion/ additional trips
October	221	Revise to serve Redmond Town Center, Old Redmond Road, Crossroads, Bellevue College; replace portions of Route 926	Route revision
October	222 / 241	New Route 241 between Eastgate Park and Ride and Bellevue Transit Center via SE Newport Way, Factoria, South Bellevue Park and Ride; Discontinue Route 222	Discontinue route/ new route
October	226 / 233	New Route 226 (connecting BRC and Eastgate Park and Ride via Bel-Red Rd., east Bellevue, Crossroads and BCC; to replace portions of Route 233;	Discontinue route / new route
October	230 / 235	New Route 235 to replace portions of Route 230 between Kingsgate Park and Ride and the Bellevue Transit Center	Discontinue route /new route
October	234	Revise to serve the path of Route 235 between Kirkland Transit Center and S Kirkland Park and Ride; revise to terminate at Bellevue Transit Center	Route revision
October	238	Revise to serve State Street and NE 68th St	Route revision
October	240	Revise to serve Eastgate Park and Ride, Richards Road and 112th Ave SE / Delete segment between Bellevue Transit Center and Clyde Hill	Route revision

Implementation	Route	Description of Change	Type
October	245	Improve midday frequency to 15 mins from 30 mins between 9am-3pm. Revise routing between Bellevue College and 156th Ave SE	Increased frequency/ Route revision
October	246	Revise routing between Factoria and Woodridge, connect Bellevue Transit Center to Clyde Hill	Route revision
October	247	Delete 247	Deletion
October	249	Revise routing to operate on NE 40th St, between Overlakd Transit Center and 140th Ave NE, to operate on Bellevue Way and to connect Bellevue Transit Center and S Bellevue Park and Ride; Improve weekday service frequency to every 30 minutes and on Sunday to every 60 minutes.	Route revision/ increased frequency
October	250	Revise to terminate at Overlake Transit Center and revise to operate on 152nd Ave NE	Route Revision
October	253	Discontinue service, replacement service by B Line and routes 221, 248, 249, 269, and ST 545	Discontinue route
October	255 / 256	Discontinue Route 256; replacement service by 255 with increased frequency of 10 minute service during weekday peak periods, evening frequency improved to every 30 minutes until 10pm	Discontinue route/increase frequency
October	261	Discontinue Route 261; replacement service by B Line and connections to Bellevue Transit Center, ST 550 and Route 271	Discontinue route
October	265	Revise to terminate at Overlake Transit Center and operate via NE 40th St and 148th Ave NE to Houghton Park and Ride	Route revision
October	266	Discontinue Route 266	Discontinue route
October	271	Add three westbound trips in the AM peak period and three eastbound trips in the PM peak period; add trips to improve midday frequency to every 15 minutes	Increased frequency/ additional trips
October	272	Discontinue service; replacement service at Bellevue Transit Center via B Line and Route 556	Discontinue route
October	303	Add two morning and three afternoon peak trips to improve span/frequency	Additional trips
October	309	Extend span by adding two morning and one afternoon trip	Additional trips
October	926	Discontinue Route 926; replacement service Route 221	Discontinue route

CONTINUED

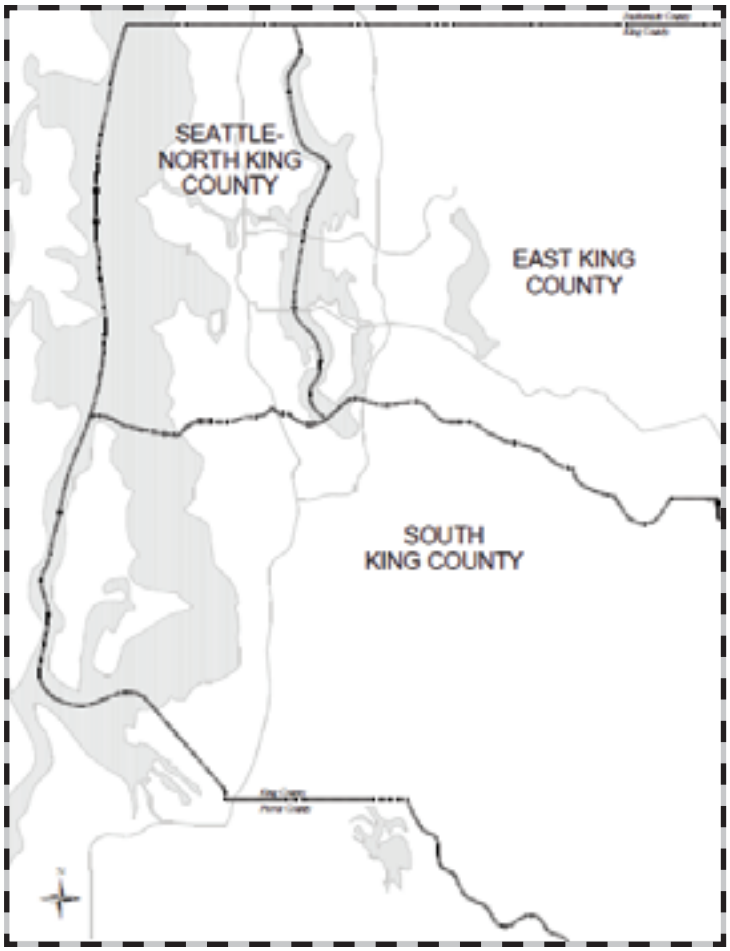
APPENDIX F:

System Hours by Subarea

Subarea Description

The service guidelines were specifically developed to guide Metro service investments across King County, whether adding, reducing or managing our system. The factors used in our corridor analysis provide a method of allocating service that is based on productivity, social equity, and geographic value. By considering multiple factors in the corridor analysis, we ensure that appropriate service is targeted to areas throughout the county.

Prior to the implementation of the service guidelines, we used subareas as a tool for allocating service to different parts of King County. As of spring 2011, the division of service hours between the historical subareas was 18 percent east, 21 percent south, and 61 percent west. This has changed slightly since fall 2009, when the distribution was 17 percent east, 21 percent south, 62 percent west.



Historical Planning Subarea	Annualized Hours in Spring 2011	Percent of Total Hours
East	591,000	18%
South	695,000	21%
West	1,988,000	61%