Measure 3: Transit Ridership and Bus Volumes

Monitoring Objectives

The purpose of monitoring transit passenger and bus volumes is as follows:

- Provide data on bus volumes by street segment in downtown Seattle
- Measure the average weekday PM peak hour and weekday passenger loads crossing the Seattle downtown core north-south screen line
- Provide data as available from Community Transit and Pierce Transit on average ridership crossing the north-south screen line during average PM peak hours and weekdays
- Identify and analyze any substantive changes in ridership or bus volumes for before and after tunnel closure conditions

Methodology

Bus volumes used for this analysis were extracted from HASTUS - the King County Metro scheduling system - using the February 2006 service change. These counts include in service as well as out of service coaches. A projection of bus volumes on downtown streets for after tunnel closure was issued with Volume 1, the Baseline Report. These projected bus volumes will be compared with bus volumes from the February 2006 service change.

For passenger loads, the Automated Passenger Count (APC) system is the primary source for passenger data for Metro coaches. APC data is collected in a random sample during each signup, downloaded and processed monthly. This data is summarized in a final form at the end of each signup. Preliminary data, based on smaller samples, is available monthly. Metro driver count data is collected on an ad hoc basis when preliminary APC results indicate that observations of trips on a particular route will fall below an adequate sample. Ridership data on Community Transit and Pierce Transit service is generated by the monitor reports supplied by each of these agencies. The ridership data from Community Transit and Pierce Transit is available by signup at the aggregate level.

APC data, supplemented by driver counts and estimates for any non-APC-observed trips, was used to estimate Metro ridership volumes crossing the screen line just south of University Street, by trip, for the spring 2005 and fall 2005 signups during the PM Peak hour and the average weekday. The results have been summarized by street and by direction to compare ridership volumes and loads before and after tunnel closure.

Bus Volumes

The bus volumes that were projected for downtown street segments during tunnel closure, as shown in the Volume 1 Baseline report, are summarized in Figure 5A. The actual post tunnel bus volumes for downtown streets, as of the February 2006 service change are shown in Figure 5B. Overall, bus volumes on most street segment in the downtown core during the PM Peak continue to be comparable to what was projected

The PM Peak period used for determining transit volumes is 4:30 to 5:30 p.m. Slight variations in volumes are due to schedule adjustments that change a trip from being included or excluded within the measured peak hour. Other changes in bus volumes can be attributed to the relocation of approximately four trips from Second Avenue to Third Avenue, and the service adjustments related to Stewart Street.

Figure 5A. PM Peak Hour Transit Volumes- Projected in September 2005 Baseline Report

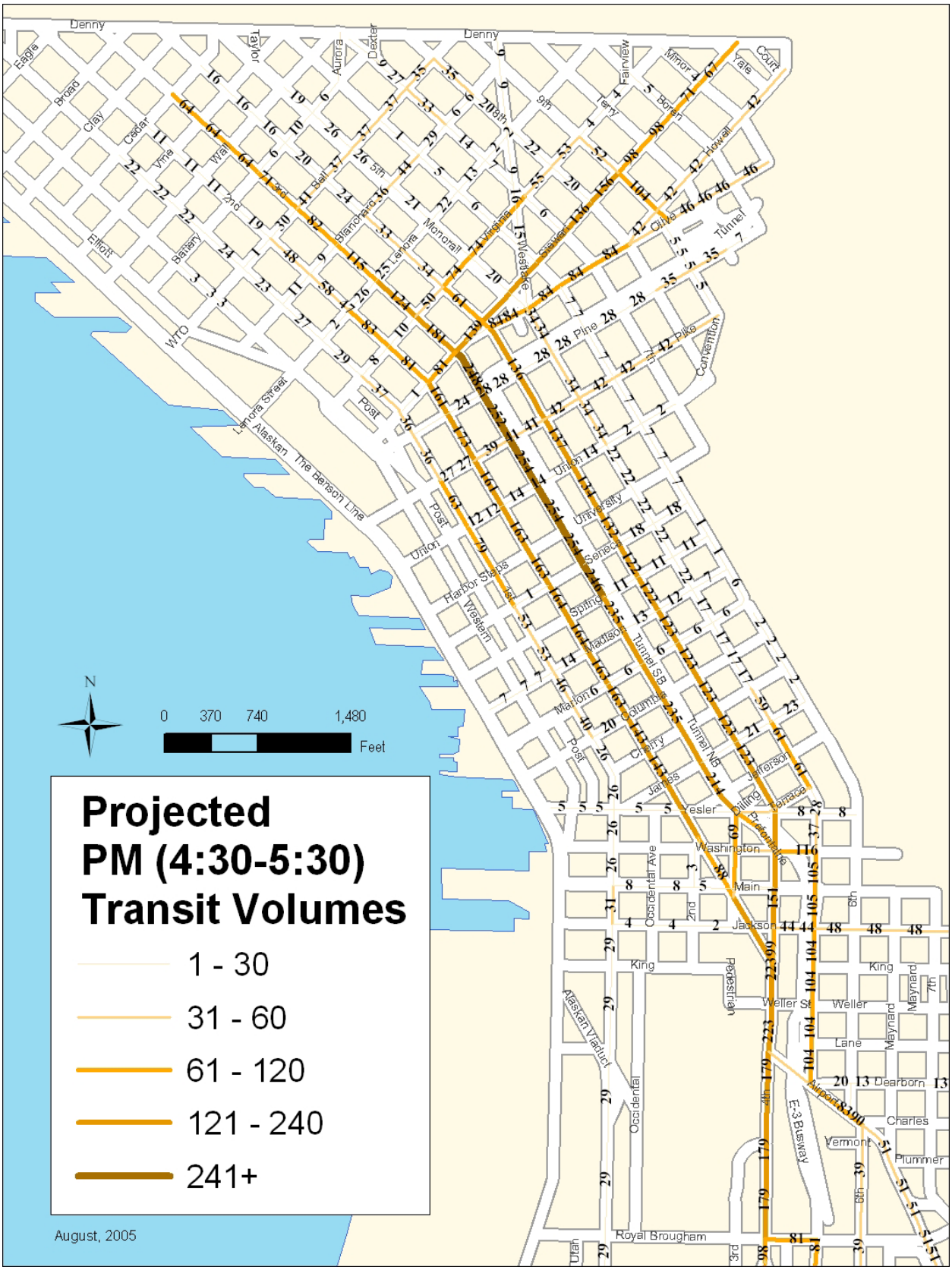
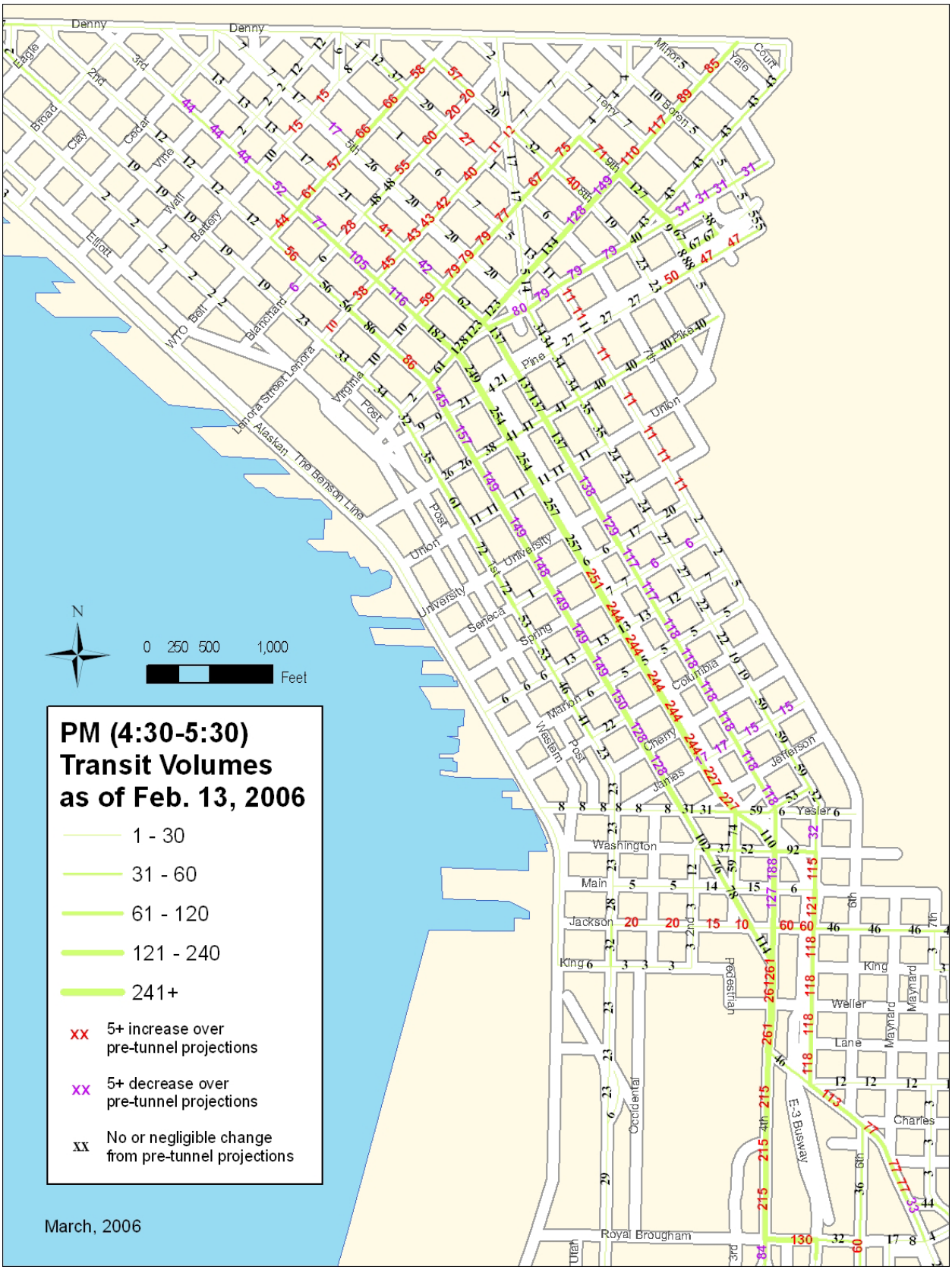


Figure 5B. PM Peak Hour Transit Volumes as of February, 2006 Service Change (includes Stewart Adjustments)



Transit Ridership Volumes

Prior to tunnel closure, approximately 95,000 north-south riders crossed the downtown screen line on King County Metro-operated service at University Street on weekdays in the fall signup of 2004. As part of a general increase in ridership, this number increased to almost 106,700 weekday riders in the spring signup of 2005. In the fall 2005 signup, ridership figures indicated that downtown loads crossing University Street had fallen slightly, to about 106,400. In addition, overall ridership on Community Transit-operated commuter services from downtown Seattle to Snohomish County increased by about 8.1 percent between May and October 2005. Ridership on Sound Transit commuter services from Pierce County as operated by Pierce Transit decreased by 4.7 percent but for the same period ridership on Sounder grew by 39.8 percent, for a net increase.

Given the general upward trend in system ridership, this report uses spring 2005 data for the before tunnel closure condition rather than fall 2004 to reflect the ridership growth that occurred prior to tunnel closure. Because Community Transit and Pierce Transit do not keep segment-level load statistics, the following discussion uses King County Metro data only.

In Volume 2 of this report, the ridership comparison was based on preliminary data from the fall 2005 service change. With this update, the final ridership statistics for fall 2005 are now available. Figure 6 compares the fall 2005 ridership at University Street on King County Metro-operated service with the baseline spring 2005 loads. Average weekday loads decreased by about one-fourth of one percent. However, the total load crossing the screenline during the peak hour from 4:30 to 5:30 p.m. actually increased by about 4.5 percent, with much of that increase occurring late in the signup, possibly indicating increasing passenger confidence in transit reliability during the peak of the peak.

Figure 6. Passenger Loads at University Street, before and after Tunnel Closure

		Weekday Riders		Percent Change	1-Hr PM Peak Riders		Percent Change
Avenue	Dir	Spring 2005	Fall 2005		Spring 2005	Fall 2005	
First	N	9,861	10,077	+2.2%	757	788	+4.1%
	S	6,002	6,475	+7.9%	769	756	-1.7%
Second	S	16,423	15,808	-3.7%	2,465	2,566	+4.1%
Third	N	17,849	28,267	+58.4%	1,478	3,157	+113.6%
	S	17,239	26,118	+51.5%	1,883	3,281	+74.2%
Fourth	N	10,375	15,301	+47.5%	825	1,213	+47.0%
Fifth	S	3,046	4,441	+45.8%	155	238	+53.5%
Tunnel	N	12,991	N.A.		1,188	N.A.	
	S	14,495	N.A.		1,959	N.A.	
Total		106,651	106,387	-0.2%	11,479	11,998	+4.5%

Figure 7 uses fall 2005 data to compare standing loads at University Street with the baseline spring 2005 standing loads. While the incidence of standing loads has increased, as expected, it is well below the level of concern.

Figure 7. Loads over Seating Capacity at University Street, before and after Tunnel Closure

		Average Loads Greater than Seat Capacity				Average Loads 20% over Seating Capacity			
		% of Weekday Trips		% of Peak 1-Hr Trips		% of Weekday Trips		% of Peak 1-Hr Trips	
Avenue	Dir	Spring 05	Fall 05	Spring 05	Fall 05	Spring 05	Fall 05	Spring 05	Fall 05
First	N	1.8%	2.0%	7.5%	8.8%	0.0%	0.2%	0.0%	0.0%
	S	1.3%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Second	S	0.3%	0.5%	0.0%	0.9%	0.0%	0.5%	0.0%	0.9%
Third	N	1.2%	1.7%	1.5%	0.0%	0.2%	0.2%	0.0%	0.0%
	S	5.0%	3.5%	4.7%	3.8%	1.3%	0.8%	1.6%	0.0%
Fourth	N	0.5%	0.5%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
Fifth	S	0.8%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
Tunnel	N	0.4%	N.A.	0.0%	N.A.	0.0%	N.A.	0.0%	N.A.
	S	0.2%	N.A.	0.0%	N.A.	0.0%	N.A.	0.0%	N.A.
Total		1.3%	1.5%	1.4%	1.6%	0.3%	0.3%	0.2%	0.2%

Fall 2005 data indicates that loads leaving the downtown core have declined about one percent from those in spring 2005, from about 90,800 riders to about 89,600 riders each weekday. However, standing loads have increased, although, again, they are still a small fraction of outbound trips. Figure 8 compares the percent of trips with standing loads leaving downtown at various times of the day. The largest increase, not surprisingly, is in the PM peak, when 4.2% of trips leaving the Seattle downtown core had standing loads, as compared to 3.4% of trips in spring 2005. This increase was spread across a number of routes, including ones not likely to be directly affected by tunnel closure.

Figure 8. Percent of Trips Leaving CBD Averaging Standing Loads, before and after Tunnel Closure.

		AM Peak	Midday	PM Peak	Evening	Total
		6-9 AM	9AM–3 PM	3-7 PM	7-11 PM	
Standing Loads	Spring 2005	2.4%	2.7%	3.4%	0.3%	2.4%
	Fall 2005	2.8%	3.0%	4.2%	0.8%	3.2%
Over 120% Load	Spring 2005	0.0%	0.7%	0.5%	0.0%	0.4%
	Fall 2005	0.6%	0.8%	0.8%	0.0%	0.7%