King County

Department of Transportation
Metro Transit
Service Development
201 South Jackson Street
M.S. KSC-TR-0426
Seattle, WA 98104-3856

May 10, 2012

TO: Scheduling Efficiencies Stakeholders

FM: Jonathon Bez, Supervisor, Scheduling

RE: Final Scheduling Efficiencies Assessment for Fall 2009-Fall 2011

The attached report assesses the impacts of scheduling efficiencies on service performance between Fall 2009 and Fall 2011. This report summarizes the changes made over the course of two years to the Metro system in response to and as recommended in the "Performance Audit of Transit, Technical Report B: Service Development, Report No. 2009-01B."

This assessment includes performance data from Fall 2009 through Fall 2011 including:

- Budgeted and actual hours changes
- System-wide goals and actual schedule data for:
  - Recovery to In-Service Ratio
  - Platform to In-Service Ratio
  - Deadhead Miles per Revenue Mile
  - Layover Lengths
  - Pay to Platform Ratio
  - Average Scheduled Layover (in minutes)
  - On-time Performance
  - Trips Leaving Terminal Late
  - Average Actual Layover (in minutes)
  - Inadequate Layovers
  - Complaints for Late Operation

This is the final detailed report documenting the entire two-year period of scheduling efficiency work. Metro will continue to monitor and report on system level scheduling efficiency and other pertinent service quality measures each service change. The format and metrics for those reports will likely change over time to match the areas of interest stakeholders have in schedule effectiveness and efficiency.

Scheduling Efficiencies Assessment

Fall 2009 - Fall 2011 Report

May 2012
King County Metro
Service Development Section

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Executive Summary

Executive Summary

In 2010 and 2011, King County Metro Transit implemented a system-wide effort to improve scheduling efficiency through use of enhanced scheduling techniques and software tools. The focus on scheduling efficiencies during this period was part of Metro's response to the 2009 Performance Audit and is aimed at achieving targets identified in the 2010-2011 biennial budget.

Metro achieved net savings of **119,034** annual hours in the 2010-2011 biennium, which translates into approximately **$12 million annual savings** going forward. During the process of scheduling service for Fall 2011, there was general agreement that seeking an additional 6,000 hours of savings to reach the biennial target was not feasible without having significant negative impacts to service quality.

2010-2011 Hours Targets and Actual Change

Service Change	Annual Hours Targets (from 2010-2011 budget)	Actual Annual Hours Change
Spring 2010	-25,000	-27,273
Summer 2010		-16,446
Fall 2010	-50,000	-37,025
Spring 2011		-22,412
Summer 2011	-50,000	+2,127
Fall 2011		-18,005
Total	***-125,000***	***-119,034***

The cumulative impact of the biennial scheduling efficiency effort has been significant savings in annual hours, and improvement of several performance measures of efficiency to within the range recommended by the 2009 performance audit. At the same time, service quality has declined and incremental changes have been required in several instances to fix problems that resulted from scheduling efficiency work on some routes.

Beyond the Fall 2011 service change, Scheduling staff will continue to identify and seek efficiencies using the techniques honed during the 2010-2011 biennium. However, instead of reducing systemwide service hours, any hours reduced through scheduling efficiencies are planned to be reinvested in the system and used to address problems of service quality that exist currently or arise in the future.

System-Level Performance Measures

Measure		Goal	Fall 2009	Fall 2010	Fall 2011	Progress
Recovery to In-Service Ratio	Weekday	0.25	0.33	0.27	0.26	
	Weekday (no trolley)	0.25	0.29	0.24	0.25	
	Saturday	n/a	0.42	0.40	0.34	
	Sunday	n/a	0.43	0.41	0.34	
Platform to In-Service Ratio		Decrease	1.51	1.46	1.43	
Deadhead Miles per Revenue Mile		Decrease	0.25	0.26	0.25	
Layover Lengths		Fewer layovers >40 min	2.7% over 40 min	1.5% over 40 min	1.1% over 40 min	
Pay to Platform Ratio		No Increase	1.11	1.10	1.11	
On-time Performance	Weekday	80%	80%	75%	75%	
Trips Leaving Terminal Late		No Increase	11%	14%	13.5% *(summer)*[2]	
Average Scheduled Layover (in minutes)		Decrease	20.2	17.1	16.3 (-19.3%)	
Average Actual Layover (in minutes)		Decrease[1] (at slower rate than scheduled)	17.3	13.8	13.7 (-20.3%)	
Inadequate Layovers (<5 min)		No Increase	7.2%	15.7%	14.9%	
Complaints for Late Operation		No Increase	391	576	719	

[1] Ideally, average actual layover will decrease, but at a slower rate than average scheduled layover, so that the gap between the two measures is reduced.

[2] Fall data is not available for trips leaving the terminal late

Section 1. Purpose and Background

This Scheduling Efficiencies Assessment tracks steps taken by King County Metro to improve scheduling efficiency as recommended in the "Performance Audit of Transit, Technical Report B: Service Development, Report No. 2009-01B." Recommendation B1a stated that:

> "Transit should expand its set of efficiency indicators and goals using Appendix 1 and use them as targets when developing schedules. These goals should be used by management to monitor the performance of the service development group and regularly communicated to decision-makers (10)."

The 2009 audit identified that Metro scheduling practices have "put more emphasis on frequent, timely service and favorable working conditions for operators" and that these practices have "come at an added cost." The 2010-2011 Transit Division budget assumed that Metro would meet cost savings targets by improving scheduling practices in ways identified by the audit, and through service reductions. This budget directive can be summarized as follows:

- During the biennium, the system will be reduced by 200,000 annual hours
- 125,000 hours of this reduction must be achieved through scheduling efficiencies that do not reduce service levels, number of trips, or span of service.
- 75,000 hours of this reduction can be achieved through actual reductions due to reduced service levels, elimination of trips, or changes in span of service.

This report addresses the reduction of hours through improved scheduling efficiency and does not address reductions achieved through reduced service levels. The 2010-2011 budget assumed minimum savings to be achieved through scheduling efficiency at three service changes during the biennium. Metro has identified more gradual and evenly phased targets for savings than laid out in the budget in order to maintain momentum, avoid potential workforce reductions, and increase in-year savings (e.g. by implementing a portion of Fall targeted savings in Summer).

In 2010 and 2011, Metro is proceeding with some service increases such as those funded by Transit Now (RapidRide, Service Partnerships), WSDOT Alaskan Way Viaduct Mitigation funds, and the SR520 Urban Partnership Agreement. In addition to these added services, regular seasonal reductions and scheduling practices may alter the number of annualized hours of service provided. For accurate comparisons, Fall 2009 will be used as a baseline and the service levels offered on all subsequent service changes will be itemized to identify increases or decreases in service levels not related to the implementation of scheduling efficiencies or service reductions.

Metro achieved net savings of **119,034** annual hours in the 2010-2011 biennium, which translates into approximately **$12 million annual savings** going forward. During the process of scheduling service for Fall 2011, there was general agreement that seeking an additional 6,000 hours of savings to reach the biennial target was not feasible without having significant negative impacts to service quality and operator working conditions.

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The cumulative impact of the biennial scheduling efficiency effort has been significant savings in annual hours, and improvement of several performance measures of efficiency to within the range recommended by the 2009 performance audit. At the same time, service quality has declined and incremental changes have been required in several instances to fix problems that resulted from scheduling efficiency work on some routes.

Beyond the Fall 2011 service change, Scheduling staff will continue to identify and seek efficiencies using the techniques honed during the 2010-2011 biennium. However, instead of reducing systemwide service hours, any hours reduced through scheduling efficiencies are planned to be reinvested in the system and used to address problems of service quality that exist currently or arise in the future.

Section 2. Fall 2009 - Fall 2011
Final Performance Data

2.1 Performance Measures

This section includes performance measures calculated using actual final data for the service changes between Fall 2009 and Fall 2011. A comparison of Fall 2009 to Fall 2011 shows the change in system-wide and base-level performance that have resulted from the two-year effort to reduce annual hours without reducing trips.

System-level efficiencies were achieved through enhanced use of HASTUS MinBus and CrewOpt modules and through cycle time analysis of individual routes. The combined impact of scheduling efficiency changes was tracked from 2009 through 2011 using a set of performance measures including measures suggested by the performance audit and additional measures focused on tracking service quality. The measures that were tracked are:

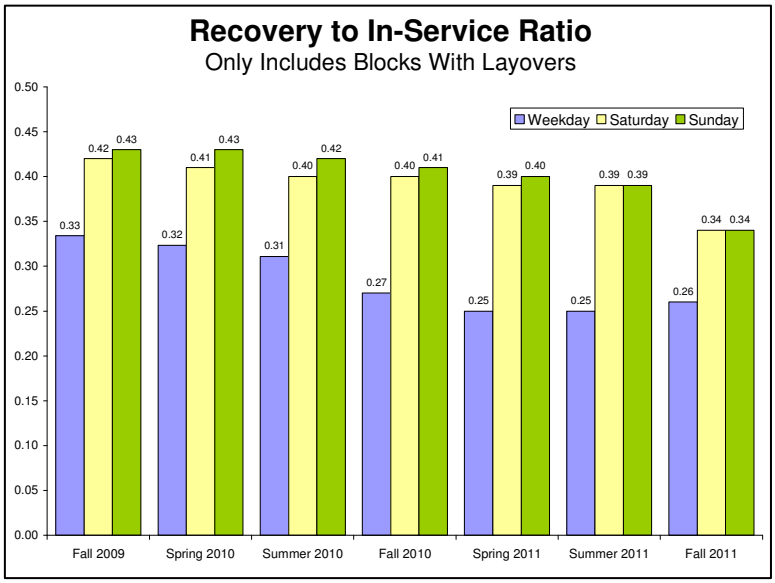
Measures Suggested by Audit	Additional Measures
Recovery to In-Service Ratio	Percent of Trips Leaving Terminal Late
Platform to In-Service Ratio	Average Scheduled Layover
Deadhead Miles per Revenue Mile	Average Actual Layover
Distribution of Scheduled Layover by Length of Layover	Customer Complaints for Late Operation
Peak to Base Ratio	
Pay to Platform Ratio	
Inadequate Layovers	
On-time performance (System-Level)	

2.2 System-Level Performance Measures

Recovery to In-Service Ratio

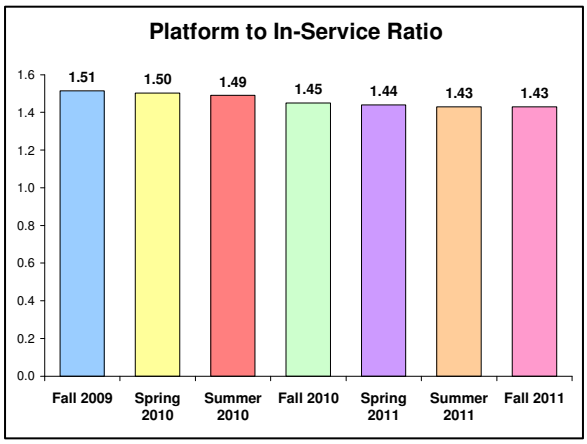
This measure is a ratio of the total recovery hours (i.e. layover time between trips) to revenue service hours. This ratio indicates how schedules balance time serving passengers with time between trips. For example, a route with a trip time of 30 minutes and a layover time of 15 minutes would have a ratio of 50 percent, or 0.5. The audit recommended recovery to in-service ratios of less than 0.25 for weekdays, less than 0.26 for Saturdays, less than 0.28 for Sundays, and less than 30 percent for all bases and days.

At a minimum, recovery time is provided at the end of a trip to provide a break for the operator and to allow late buses to get back on schedule. Service design also has a large impact on recovery time. At Metro, recovery time is added for some routes to allow service to be evenly spaced for "clock-face" headways or to support timed transfers. Regularly spaced and repeated headway patterns support transfers, so moving away from even headway intervals could significantly reduce the ease of transferring and discourage ridership.



From 2009 to 2011, recovery to in-service ratios decreased significantly for weekdays, Saturdays, and Sundays. Metro now meets the audit recommendations for weekdays with a recovery to in-service ratio of 0.26 with trolley buses, or 0.25 without trolley buses. Saturday and Sunday ratios still remain higher than suggested by the audit, but reflect significant reduction since 2009.

Platform to In-Service Ratio (Platform Hours per Revenue Hour)

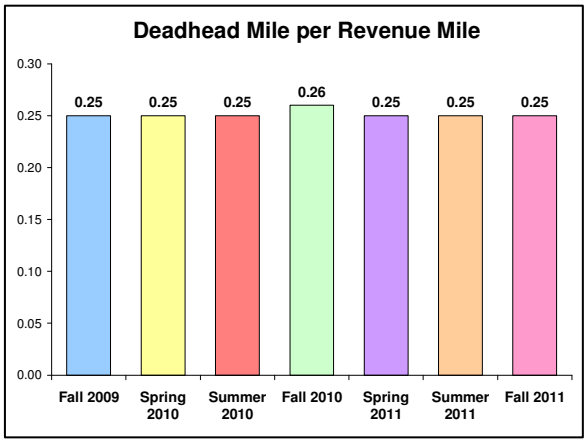


This measure is a ratio of total platform hours to total revenue hours. Platform hours include all hours from the time a bus leaves the base until the bus returns to base, including revenue hours, deadhead time (i.e. travel time to and from the base, between route terminals), and recovery time. Much like the recovery hours per revenue hour measure, a low ratio is desirable.

Service and facility characteristics such as routing, span of service, base locations, and bus type (i.e. diesel or electric trolley bus) can have a large impact on this measure. For example, this ratio is higher for peak-direction services, because buses spend more time deadheading to and from terminals, and may only provide one or two trips before returning to base. However, deadheading can be the most efficient way to provide service when there is little or no demand for service in the off-peak direction. Policy constraints such as subarea allocation rules also limit Metro's ability to utilize deadheading buses for service when they cross subarea boundaries. Therefore, Metro is limited in the ability to reduce platform to in-service ratio in some cases.

From 2009 to 2011, the platform to in-service ratio decreased from 1.51 to 1.43, showing a similar pattern of decrease the related recovery to in-service ratio measure. This reflects the decrease in layover and recovery time relative to revenue time.

Deadhead Miles per Revenue Mile

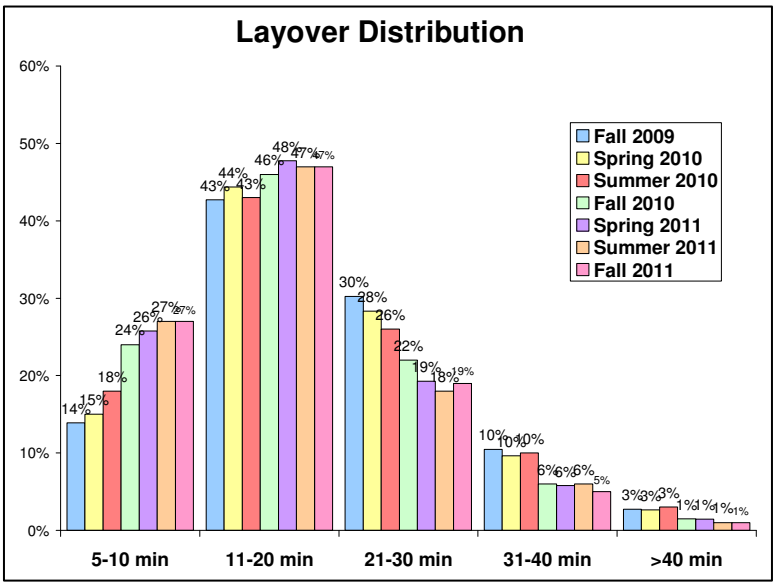


This measure is a ratio of the miles that a bus is deadheading to or from a route versus the miles that a bus travels in service. Deadhead miles include miles a bus travels to get to and from the base, traveling between routes, or when there is no expectation of carrying revenue passengers. A low ratio is desirable for this measure. However, service and facility characteristics such as routing span of service, demand for services, base locations, and bus type have a large impact on this ratio. For example, if an operating base is not located close to the beginning of a route, buses may need to deadhead a long distance before going into service.

From 2009 to 2011, deadhead miles per revenue mile remained steady. This reflects the fact that deadhead requirements are driven more by service plans and network structure than by scheduling techniques. While scheduling techniques have reduced the number of buses pulling out of the base, enhanced use of HASTUS has included increased emphasis on looking for opportunities to deadhead between terminals as a way to increase efficiency.

Distribution of Scheduled Layover by Length

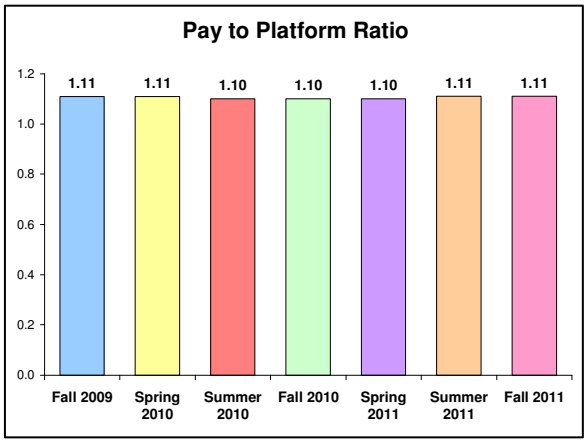
This measure identifies the number of scheduled layovers that fall within different lengths of time. The recommended goal is to have no layovers longer than 40 minutes, while recognizing that some exceptions may occur when there are no other options or special conditions apply. A reduction in layovers between 21 and 40 minutes long is also desired. Layovers of less than 5 minutes outside of "pulses" are not allowable within the standards of the ATU Local 587 contract, so only the longer layovers will be tracked.



From 2009 to 2011, there was a significant increase in shorter layovers, particularly those scheduled between 5 and 10 minutes. Layovers longer than 21 minutes significantly decreased, particularly those between 21 and 30 minutes. The percent of layovers longer than 40 minutes was reduced to 1% of system total layovers.

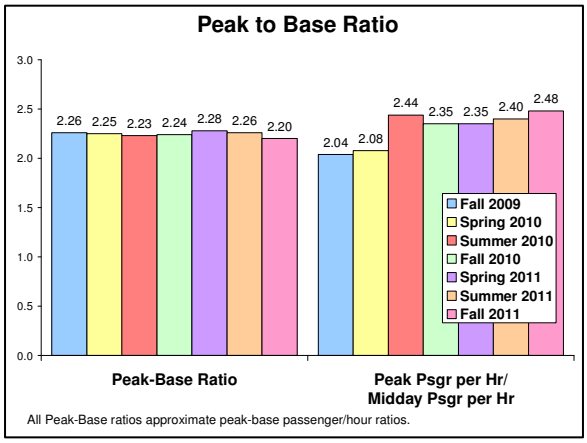
Pay to Platform Ratio

This measure is a ratio of the total pay hours divided by the total platform hours. Total pay hours include time for an operator to sign in, travel time (such as for road reliefs), guarantees, and overtime. It reflects efficiency of crew scheduling as it indicates the degree to which operators are paid for driving a vehicle versus other tasks. However, some degree of non-driving pay is required. Also, since pay hours do not include benefits provided to employees, it can sometimes be more cost-effective to provide scheduled overtime rather than increasing the number of employees. Therefore when tracking this ratio one must also consider whether reducing this ratio has increased costs in other ways, and what the tradeoffs are for reducing extra board or other non-driving pay time.



From 2009 to 2011, the pay to platform ratio remained steady. The 2009 audit identified that lower ratios are generally more efficient. Metro has what is considered by most in the industry to be a low "Pay to Platform" ratio, so maintenance at 2009 levels is positive.

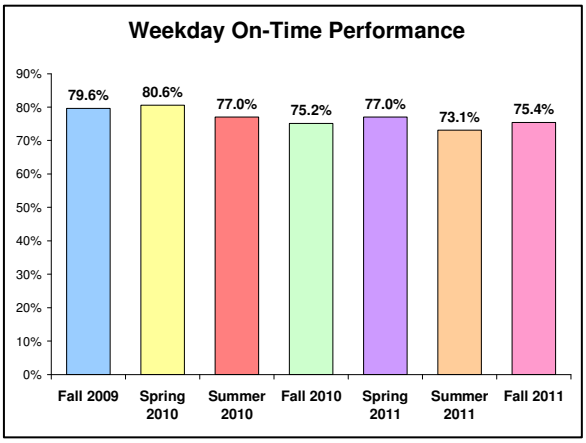
Peak to Base Ratio
Peak to Base Passengers per Hour



This measure is a ratio of the maximum number of buses in use during peak period (weekday afternoons) to the minimum number buses in use during the weekday midday period. It is desirable for the peak to base ratio to match the ratio of peak to base passengers per hour, because that shows that the distribution of buses is being matched well to the distribution of riders during different time periods of the day. Service design and demand for services have a large impact on this ratio. Having a large number of commuter-oriented routes that operate only during peak periods leads to a high peak to base ratio because those routes only require buses for a few hours a day, leaving the buses idle during the remainder of the day and on weekends.

From 2009 to 2011, the peak to base ratio decreased slightly, and the peak to base passengers per hour increased slightly. The decline in peak to base ratio since 2009 reflects the increased efficiency of scheduling that reduced peak blocks as well as service cuts to peak routes that occurred during the same period but that were not part of the scheduling efficiency effort. Since 2009, ridership has grown more peak-oriented when compared with service supply as measured by peak to base buses.

On-time Performance

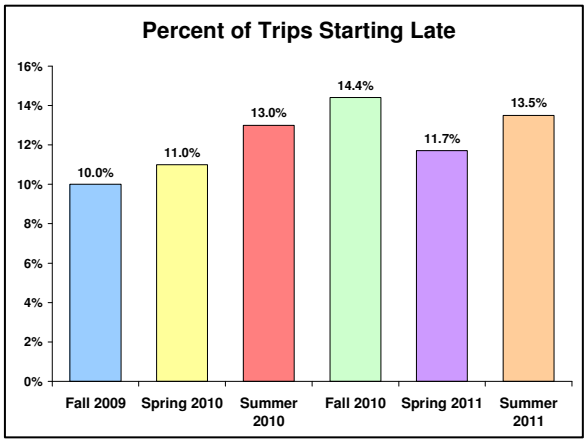


On-time performance is a measure of service quality and how accurately schedules reflect the actual service provided. Metro defines On-time performance as arrival at a scheduled time point between 1 minute before and 5 minutes after a scheduled time. On-time performance has a cyclical nature that depends on factors like road construction, special events, economic conditions, and ridership changes, so changes in this measure cannot be viewed as fully attributable to scheduling efficiency work. At the same time, changes to schedules that make them more or less vulnerable to the volatility of all external conditions will ultimately affect On-time performance. Due to seasonal fluctuations, On-time performance should be compared to prior year data.

From 2009 to 2011, on-time performance declined significantly, and it now falls well below the system target of 80 percent. This decline largely reflects the fact that decreased recovery time means that buses have less cushion between trips, so individual trips are now more vulnerable to delays from previous trips.

Percent of Trips Leaving Terminal Late

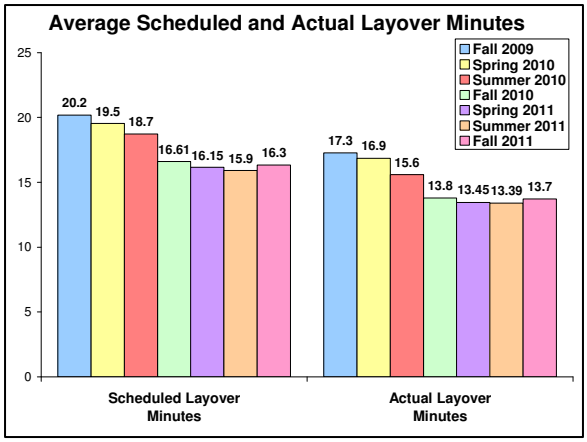
This is a measure of the number of trips leaving a terminal more than five minutes later than scheduled. A lower percent of trips leaving the terminal late is desirable. One limitation of measuring late starts is that Metro has a large number of routes that are through-routed, meaning that operators have no recovery time. While there are operational benefits from through-routing, this service design can significantly impact late starts because there is no chance for operators to get back on schedule.



From 2009 to 2011, the percent of trips starting late increased. Fall 2011 data is not available due to changes in data systems that do not allow calculation of trips leaving late in the same way as was done in the past. However, the trend of increased lateness corresponds with the decrease in recovery times that means buses are less able to get back on schedule if a trip is late.

Average Scheduled Layover; Average Actual Layover

These measures identify the average scheduled layover and average actual layover across all Metro bus trips. On any given trip, the actual layover may be different than scheduled due to factors such as congestion, construction, traffic accidents, high ridership (such as due to special events), high numbers of wheelchair lift deployments and operator driving styles.



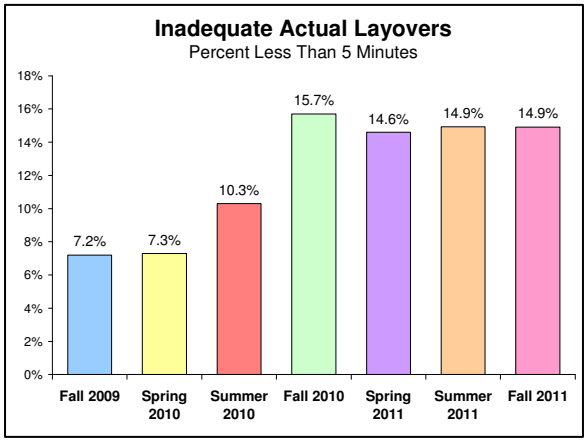
Measuring both scheduled and actual layovers indicates whether scheduling efficiency changes are affecting the accuracy of schedules and whether the changes are affecting the difference between scheduled and actual layover. This is important because it reflects actual operator working conditions. It is desirable for the actual and scheduled layovers to be the same. However, since day-to-day variability cannot be fully accounted for in writing schedules, it is desirable that the difference between the actual and scheduled layovers should be decreased.

From 2009 to 2011, scheduled and actual layover both decreased significantly. The average actual layover decreased by a larger percentage than average scheduled layover, indicating a larger difference between scheduled and actual layover than in the baseline period.

Inadequate Layovers

This measure identifies the actual layovers that were shorter than five minutes. Scheduled layovers are required to be at least five minutes, according to Metro contracts with ATU Local 587. However, actual layovers may fall below five minutes for many of the factors listed above.

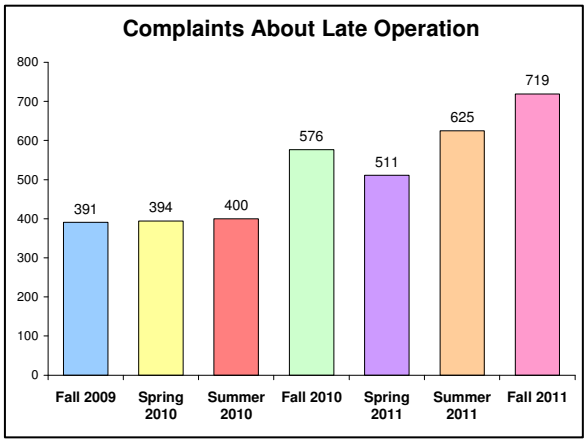
From 2009 to 2011 the percent of inadequate actual layovers increased significantly. This indicates that more operators are experiencing layovers less than scheduled.



Complaints about Late Operation

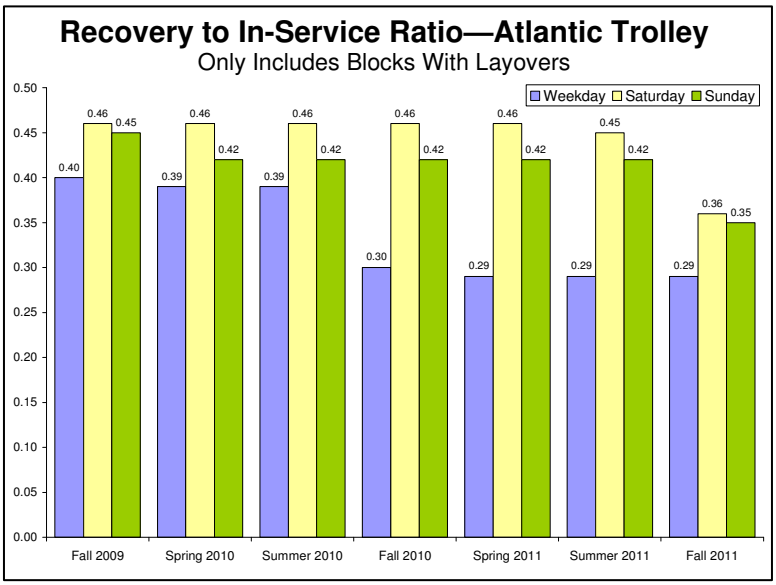
This measure identifies the number of customer complaints that Metro received about late operation. These complaints are recorded through Metro's Sales and Customer Service office on a monthly basis.

From 2009 to 2011, the number of complaints about late operation increased from 391 to 719 in comparable time periods. This is expected based on the decline in on-time performance, and it confirms the negative impact of declining service quality on Metro riders.

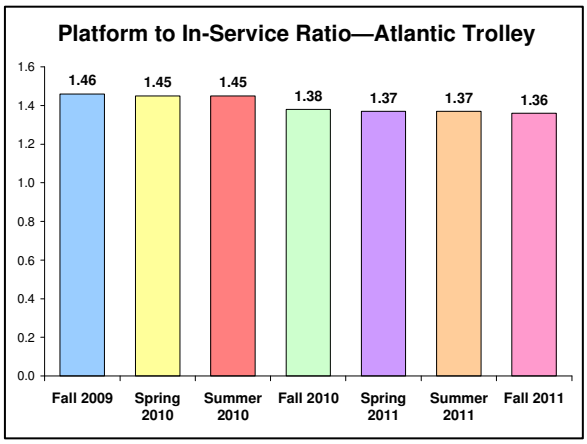


2.3 Base-Level Performance Measures

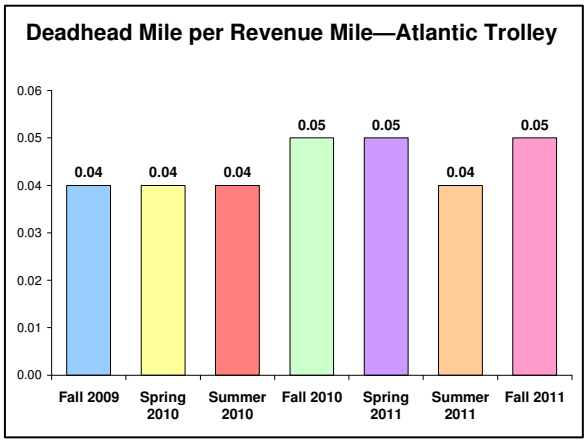
Atlantic Base Trolley



Recovery to In-Service Ratio
The recovery to in-service ratio remained steady at 0.29 on weekdays in Fall 2011. The ratio decreased to 0.36 on Saturdays and 0.35 on Sundays.

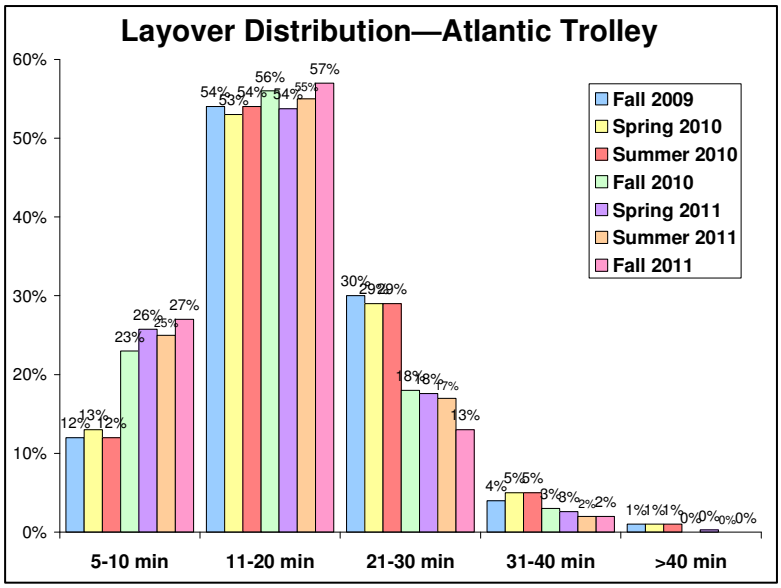


Platform to In-Service Ratio
The platform to in-service ratio decreased to 1.36 in Fall 2011.

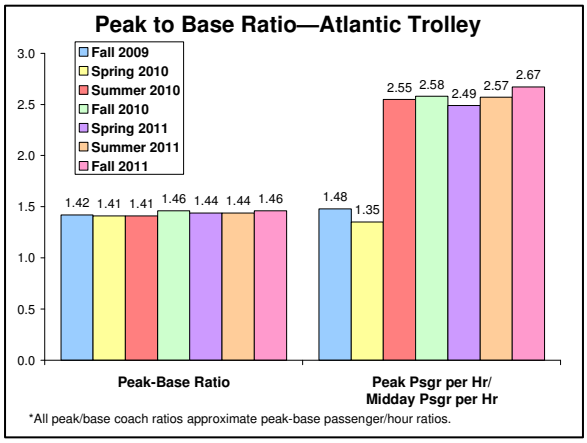


Deadhead Miles per Revenue Mile
Deadhead miles per revenue mile increased slightly to 0.05 in Fall 2011. This ratio is much lower than other bases due to the practice of putting trolley deadheads into service as they travel along the trolley overhead wire to their terminals.

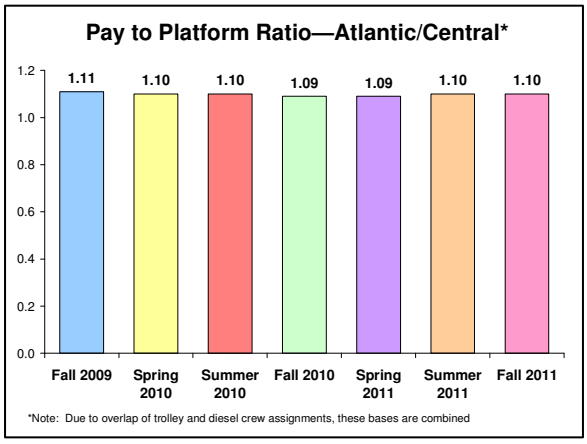
Distribution of Scheduled Layover by Length of Layover
Atlantic Base has no layovers longer than 40 minutes, the lowest of any base.



Peak to Base Ratio
The peak to base ratio rose slightly to 1.46 in Fall 2011. The peak to base passengers ratio increased to 2.67 in Fall 2011.

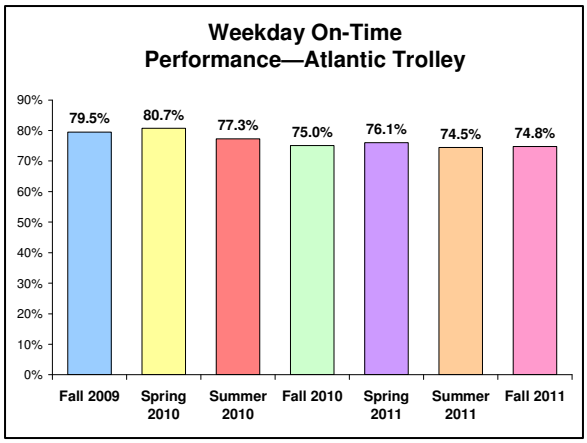


Pay to Platform Ratio
The pay to platform ratio remained at 1.10 in Fall 2011. Performance on this measure is combined with Central/Atlantic Diesel.



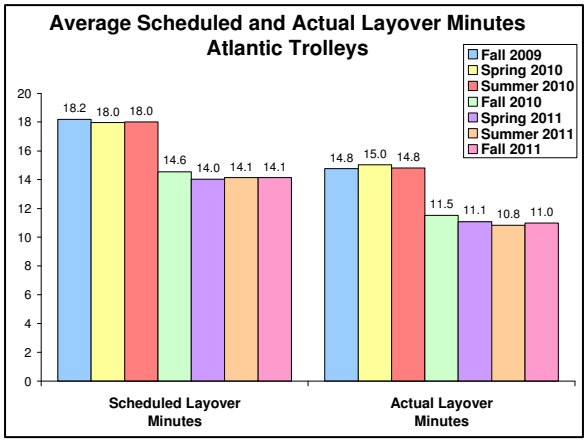
On-time Performance

On-time performance was 74.8 percent in Fall 2011, well below the baseline period and the prior year.

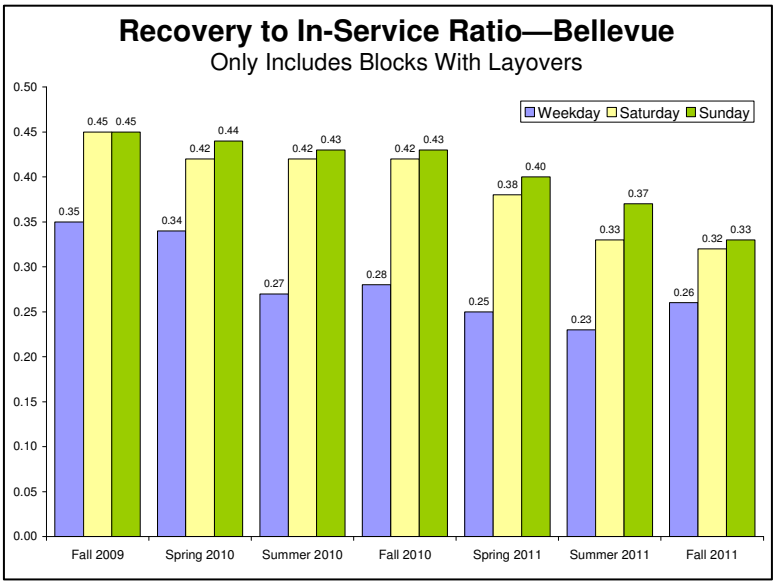


Average Scheduled Layover and Average Actual Layover

Average scheduled layover remained steady at 14.1 minutes and average actual layover increased slightly to 11 minutes in Fall 2011. Atlantic Base has the shortest average scheduled and actual layovers of any base in Fall 2011.

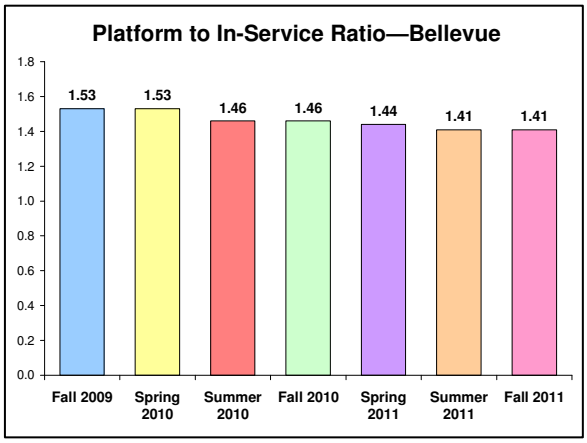


Bellevue Base



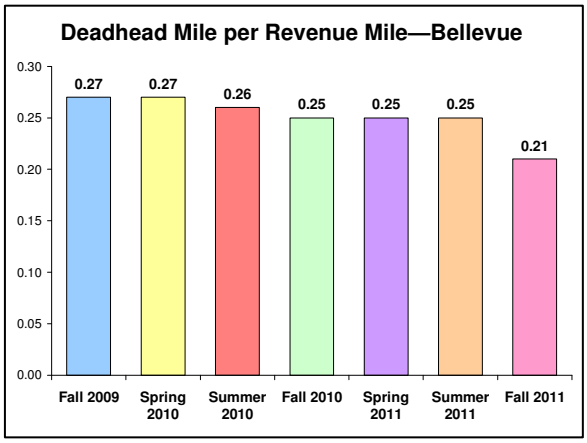
Recovery to In-Service Ratio

The recovery to in-service ratio increased to 0.26 in Fall 2011. The ratio on Saturdays decreased slightly and on Sundays decreased significantly.



Platform to In-Service Ratio

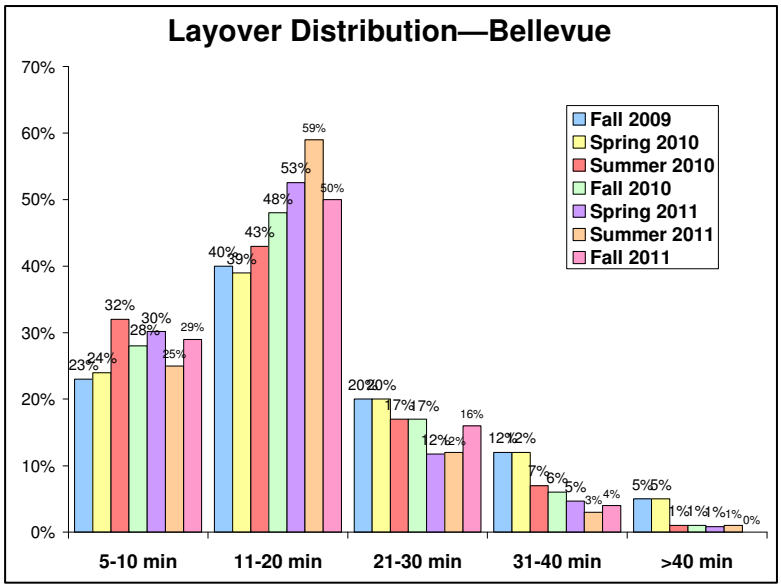
The platform to in-service ratio remained steady at 1.41 in Fall 2011.



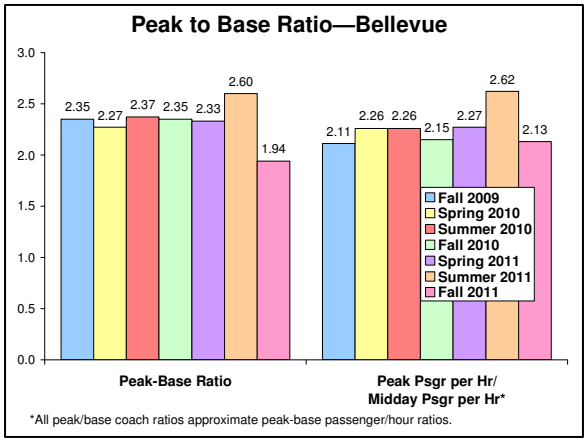
Deadhead Miles per Revenue Mile

Deadhead miles per revenue mile decreased to 0.21 in Fall 2011. This change was due to the B Line restructures which discontinued several peak-only routes. Bellevue Base now has the lowest ratio on this measure of the non-trolley bases.

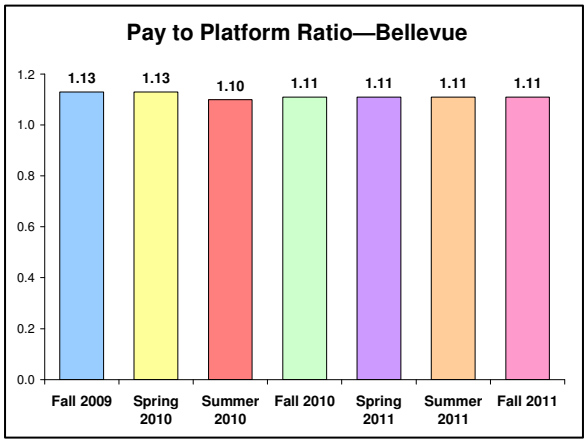
Distribution of Scheduled Layover by Length of Layover
The percentage of layovers greater than 40 minutes decreased to less than 0.5 percent. Other layover lengths saw some shifts, with a decrease in layovers between 11 and 20 minutes long and increases in layovers of other lengths.



Peak to Base Ratio
The peak to base ratio decreased to 1.94 in Fall 2011, reflecting the discontinuation of several peak-only routes. Fall passenger data showed a decrease in peak to base passengers to 2.13.

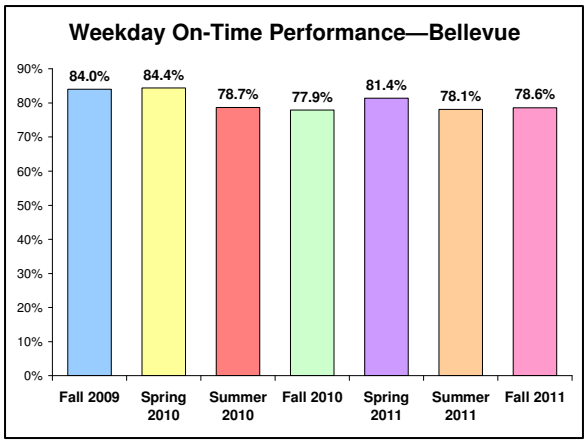


Pay to Platform Ratio
The pay to platform ratio remained steady in Fall 2011.



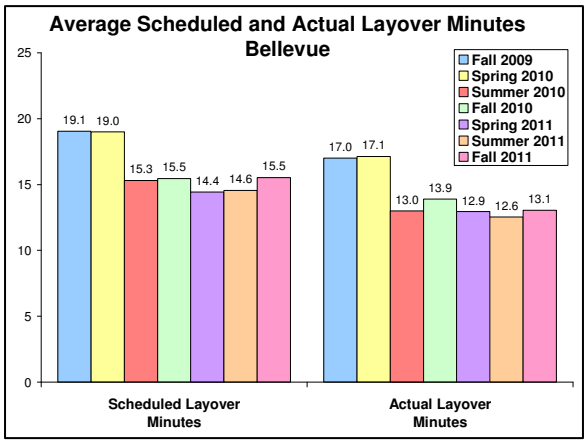
On-time Performance

On-time performance increased slightly to 78.6 percent in Fall 2011, below the baseline period and slightly below the previous year.



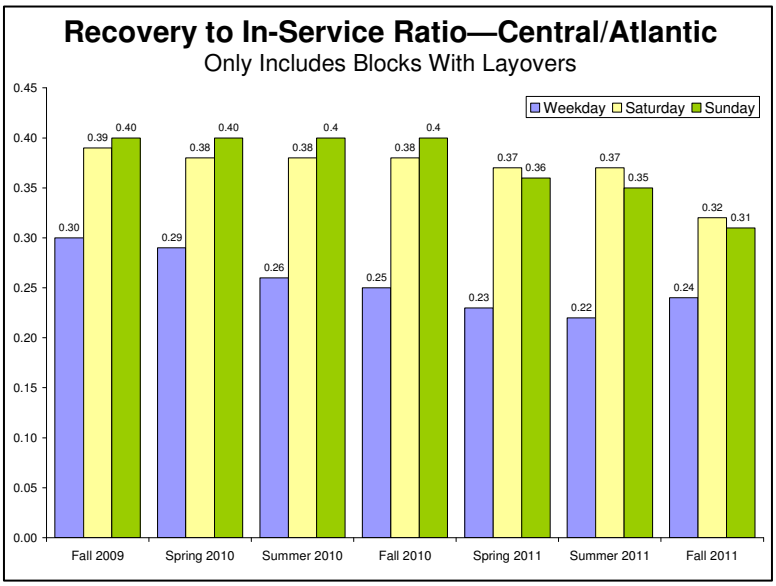
Average Scheduled Layover and Average Actual Layover

Average scheduled layovers increased to 15.5 minutes and actual layovers increased to 13.1 minutes in Fall 2011.

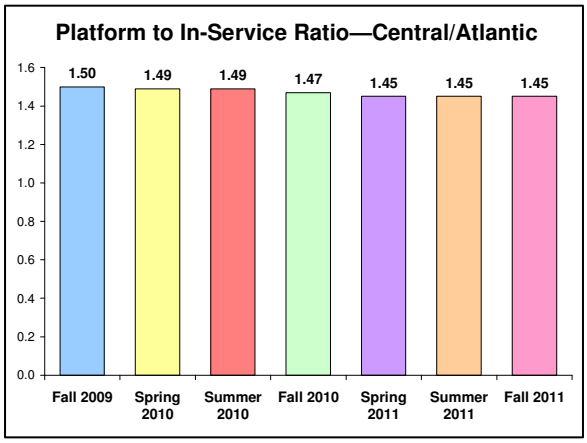


Central/Atlantic Base Diesel

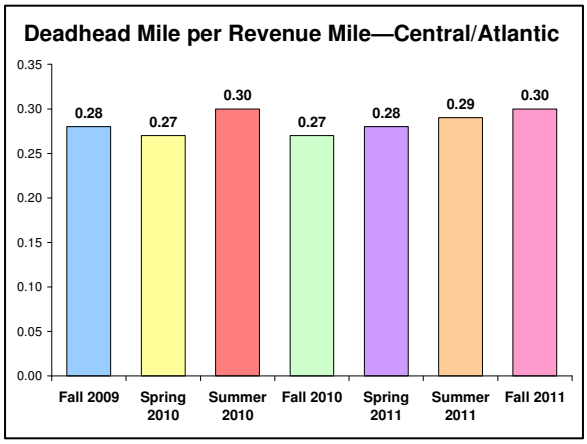
Recovery to In-Service Ratio
The weekday recovery to in-service ratio increased to 0.24 in Fall 2011, the first increase since the baseline period. Saturday and Sunday ratios decreased.



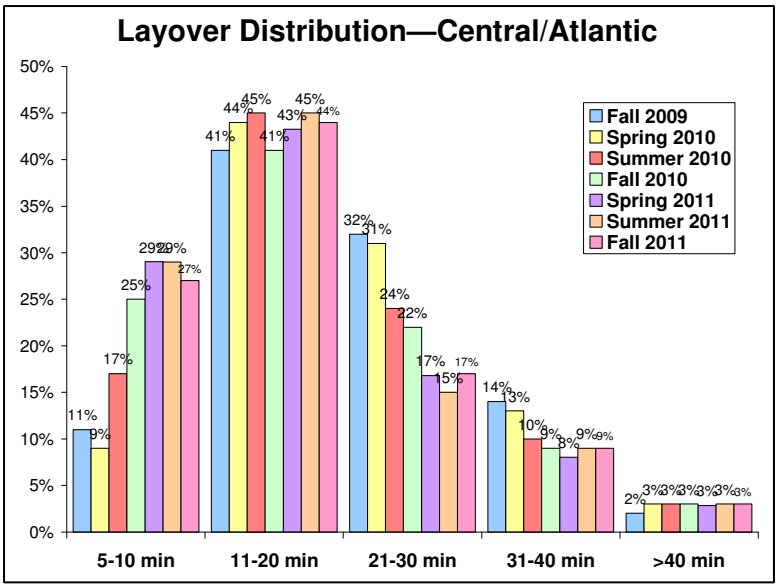
Platform to In-Service Ratio
The platform to in-service ratio remained steady at 1.45 in Fall 2011.



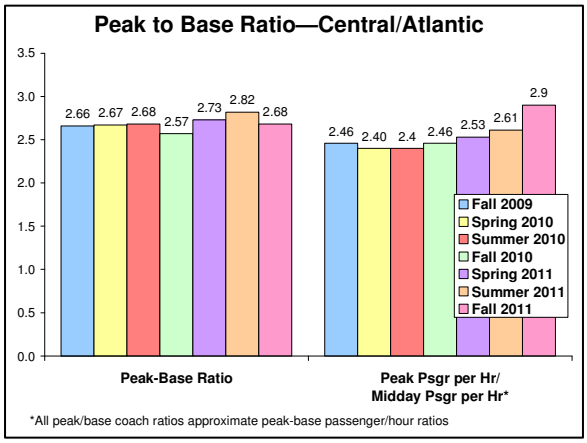
Deadhead Miles per Revenue Mile
Deadhead miles per revenue mile increased to 0.30 in Fall 2011 and is above the level of the baseline period.



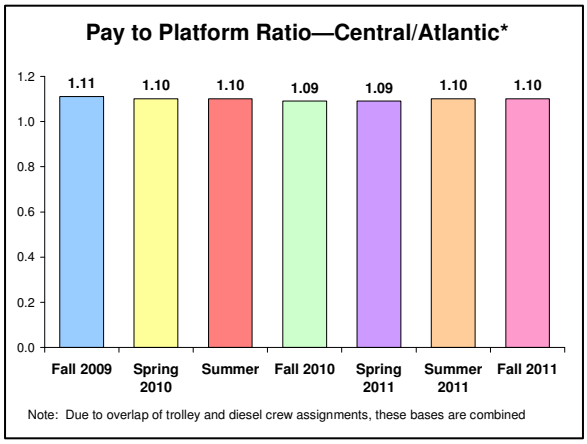
Distribution of Scheduled Layover by Length of Layover
The number of layovers longer than 40 minutes increased very slightly in Fall 2011. There was some increase in layovers between 21 and 30 minutes long, and a decrease in shorter layovers.



Peak to Base Ratio
The peak to base ratio decreased to 2.68 in Fall 2011. Fall 2011 passenger data showed an increase in the peak to base passengers to 2.9, reflecting increasing peak demand relative to midday.

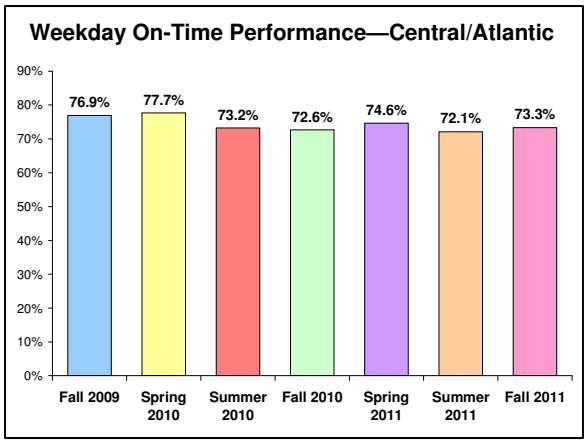


Pay to Platform Ratio
The pay to platform ratio remained steady at 1.10 in Fall 2011. Performance on this measure is combined with Atlantic Trolley due to overlapping crew assignments.



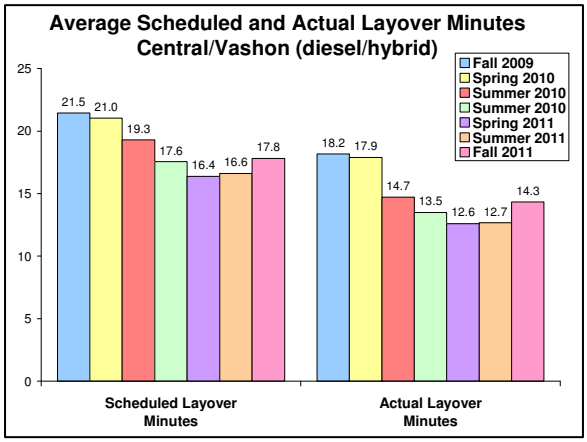
On-time Performance

On-time performance increased to 73.3 percent in Fall 2011, but remains below the baseline period.



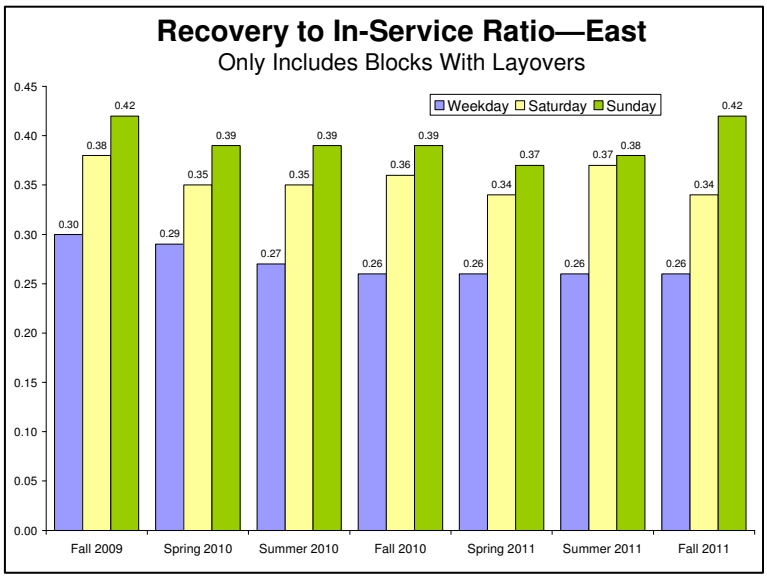
Average Scheduled Layover and Average Actual Layover

Average scheduled layover increased to 17.81 minutes and average actual layover increased to 14.33 minutes in Fall 2011.

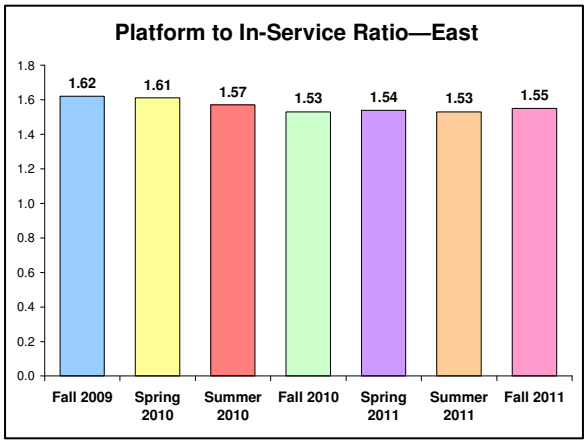


East Base

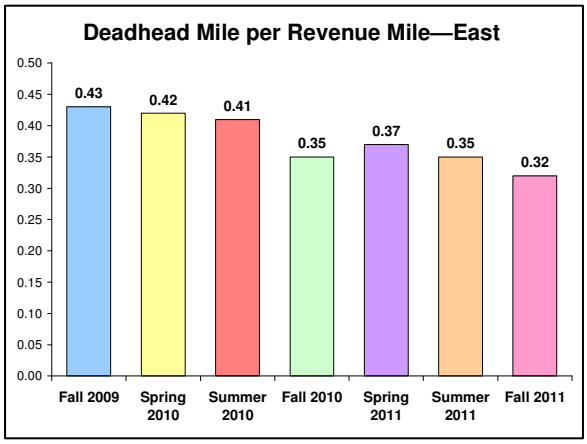
Recovery to In-Service Ratio
The recovery to in-service ratio increased significantly to 0.31 on weekdays in Fall 2011. This is the result of the implementation of the B Line and related restructures. The B Line itself was originally scheduled with long layovers to allow for flexibility once service began operating. The ratio of recovery to in-service time on the B Line has been adjusted since it began operating, which is not reflected in this data. Ratios decreased on Saturdays but increased on Sundays.



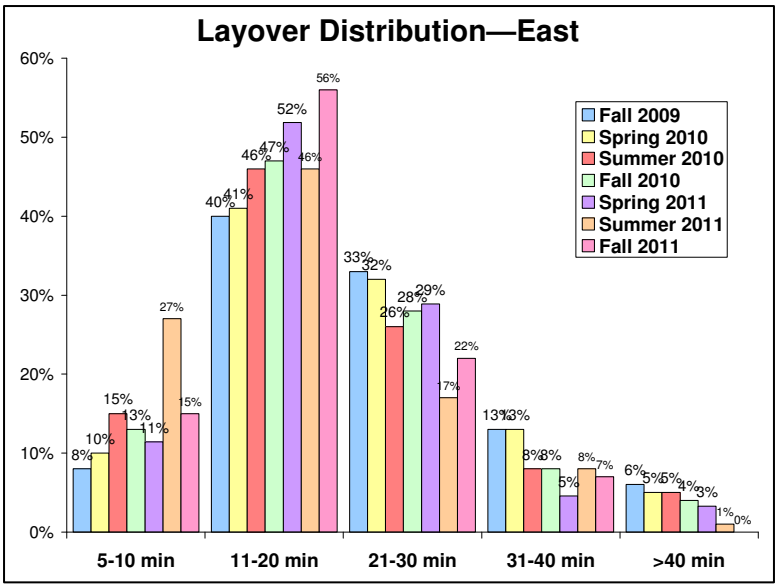
Platform to In-Service Ratio
The platform to in-service ratio increased slightly to 1.55 in Fall 2011.



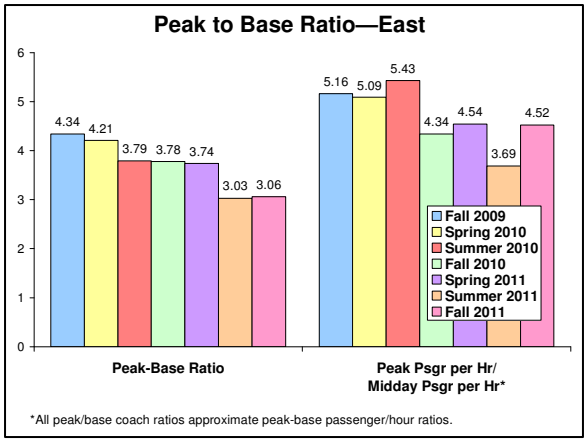
Deadhead Miles per Revenue Mile
Deadhead miles per revenue mile decreased to 0.32 and remains well below the baseline.



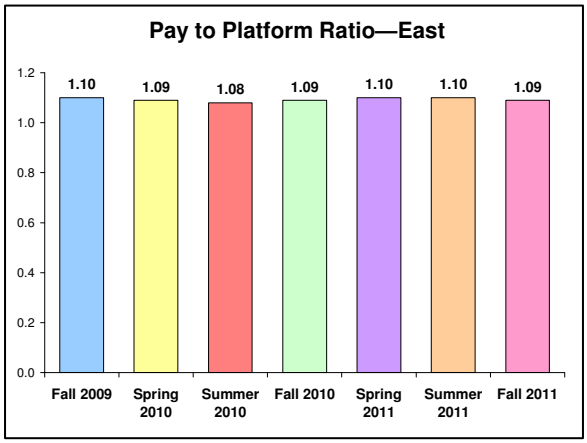
Distribution of Scheduled Layover by Length of Layover
The percent of layovers over 40 minutes decreased in Fall 2011. There was a decrease in layovers between 5 and 10 minutes long, and an increase in layovers between 11 and 30 minutes long.



Peak to Base Ratio
The peak to base ratio increased slightly to 3.06 in Fall 2011. The ratio has decreased significantly but remains the highest of any base. This reflects the fact that East Base has a large proportion of peak-only routes in comparison to the rest of the system. The peak to base passenger ratio was 4.52 in Fall 2011, so East Base continues to have a higher ratio of peak to base demand than peak to base service provided.

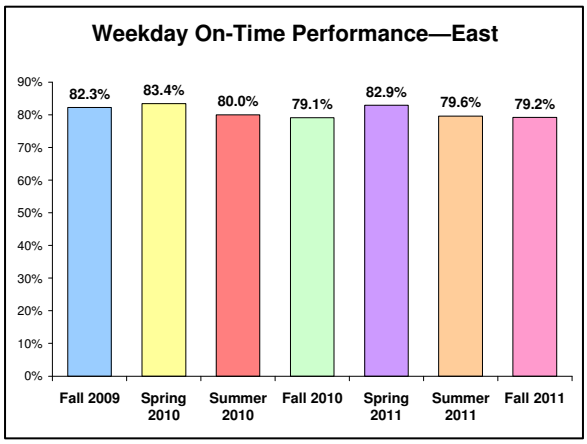


Pay to Platform Ratio
The pay to platform ratio decreased to 1.09 in Fall 2011.



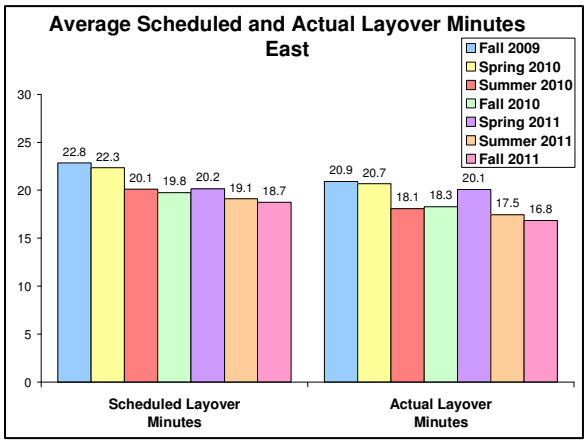
On-time Performance

On-time performance declined to 79.2 percent in Fall 2011, below the baseline period and but very slightly above the previous year. East Base still has the best on-time performance of any base.



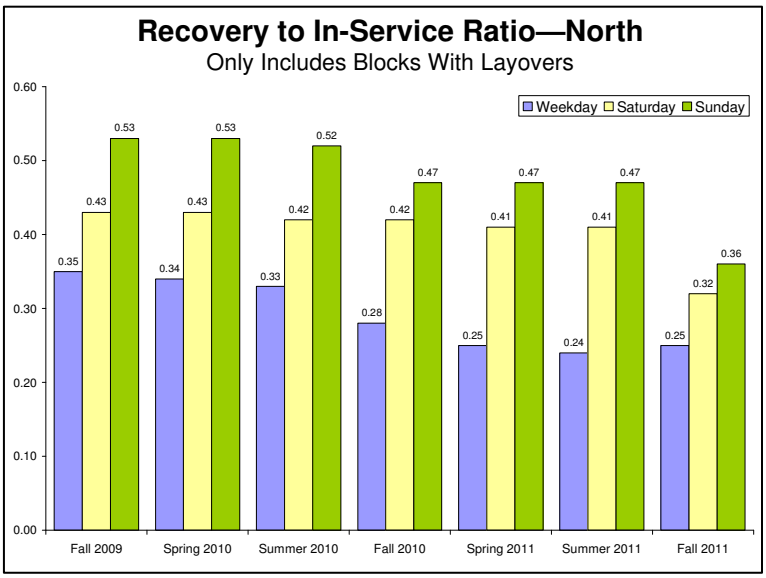
Average Scheduled Layover and Average Actual Layover

Average scheduled layover decreased to 18.74 minutes and average actual layover decreased to 16.84 minutes in Fall 2011. East Base has the longest actual average layover of any base.

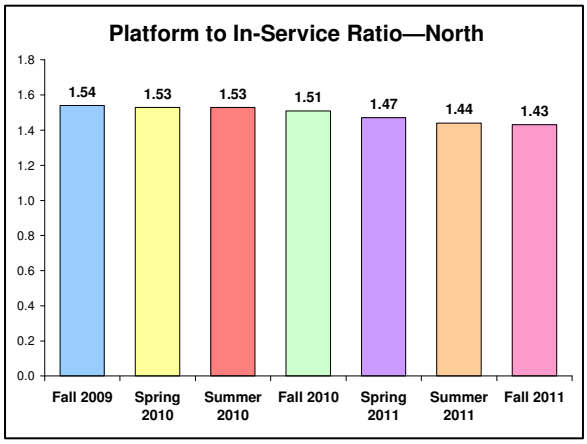


North Base

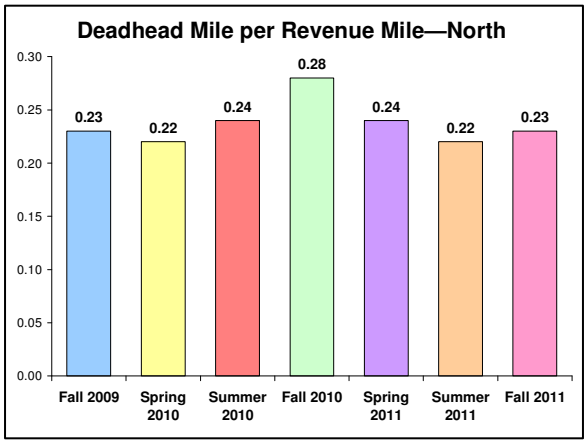
Recovery to In-Service Ratio
The recovery to in-service ratio increased to 0.25 on weekdays in Fall 2011. Saturday and Sunday ratios both decreased significantly.



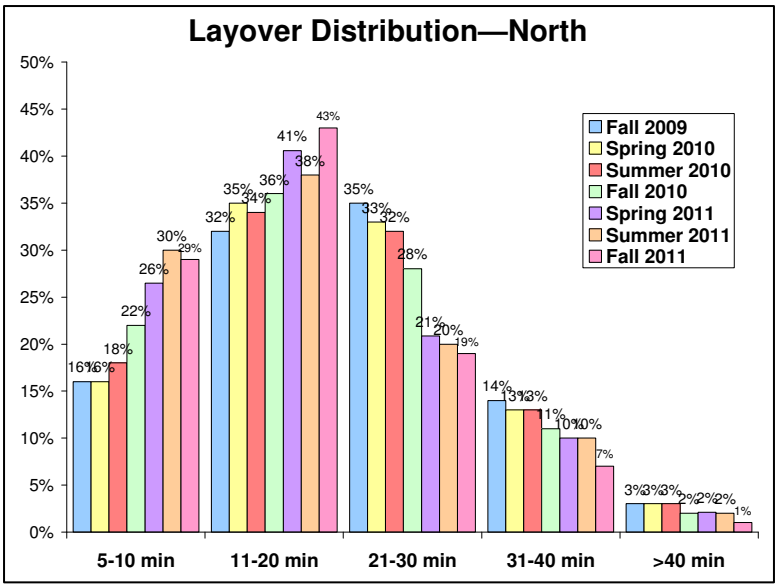
Platform to In-Service Ratio
The platform to in-service ratio decreased to 1.43 in Fall 2011.



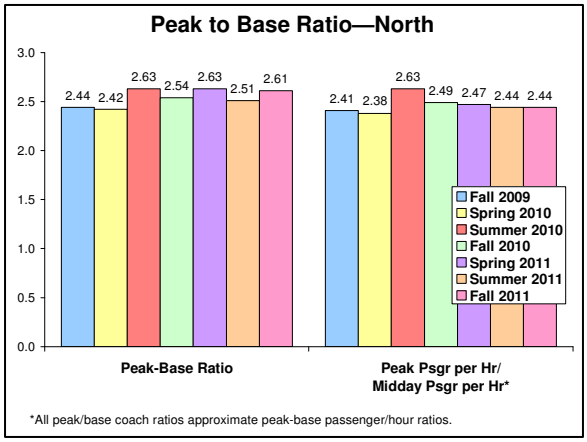
Deadhead Miles per Revenue Mile
Deadhead miles per revenue mile increased slightly to 0.23 in Fall 2011 and is now the same as during the baseline period.



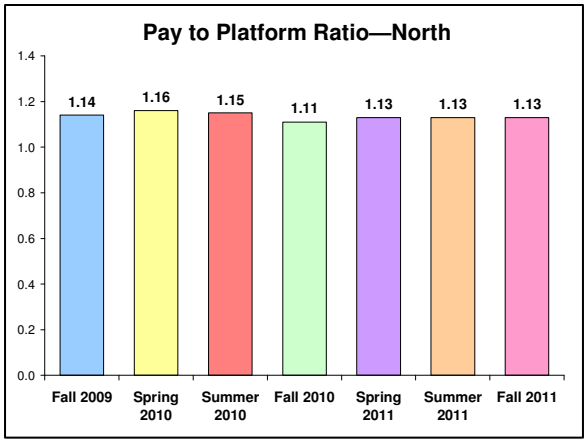
Distribution of Scheduled Layover by Length of Layover
The percentage of layovers longer than 40 minutes decreased. The percentage of between 11 and 20 minutes long increased, and other lengths of layovers decreased.



Peak to Base Ratio
The peak to base ratio increased to 2.61 in Fall 2011 and remains higher than the baseline. Peak to base passengers per hour remained steady for Fall 2011, and passenger data continues to show that supply of service and passenger demand are well-matched on North Base services.

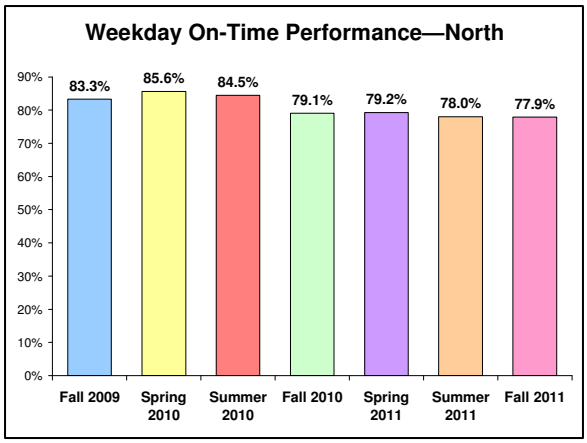


Pay to Platform Ratio
The pay to platform ratio remained steady at 1.13 in Fall 2011.



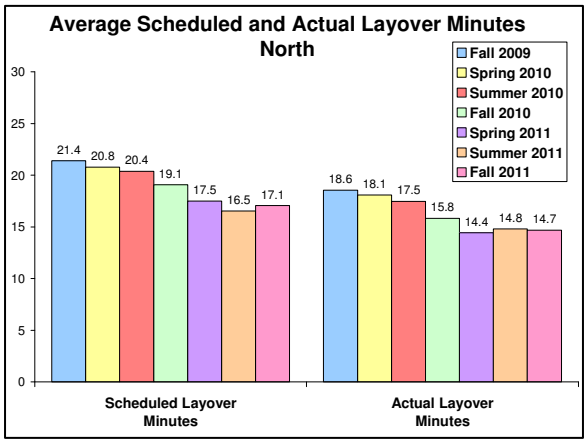
On-time Performance

On-time performance declined very slightly to 77.9 percent in Fall 2011, well below the baseline and the prior year.



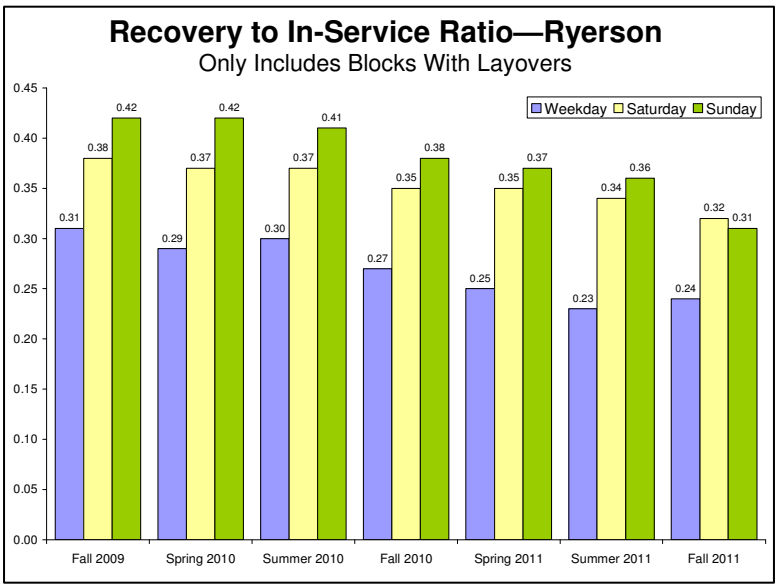
Average Scheduled Layover and Average Actual Layover

Average scheduled layover increased to 17.06 minutes but actual layovers decreased to 14.7 minutes continued to decrease in Fall 2011.

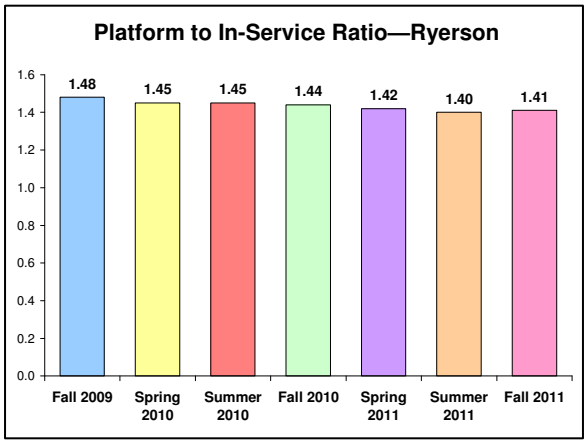


Ryerson Base

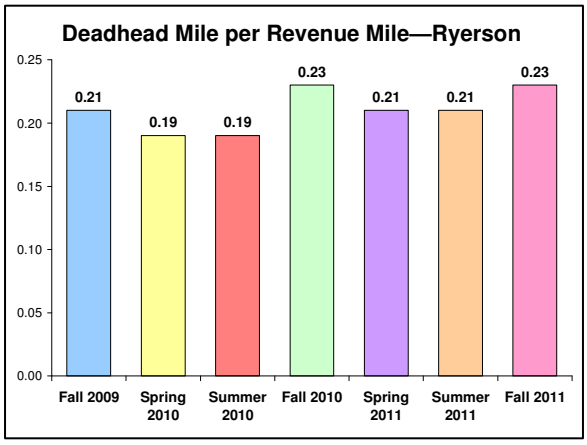
Recovery to In-Service Ratio
The recovery to in-service ratio increased to 0.24 on weekdays in Fall 2011. Ratios decreased on Saturdays and Sundays.



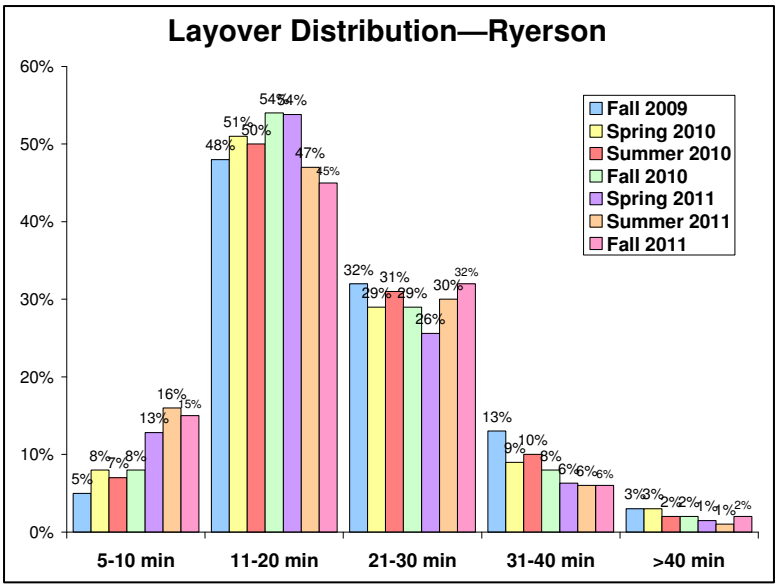
Platform to In-Service Ratio
The platform to in-service ratio increased slightly to 1.41 in Fall 2011, but remains well below the ratio of the baseline period.



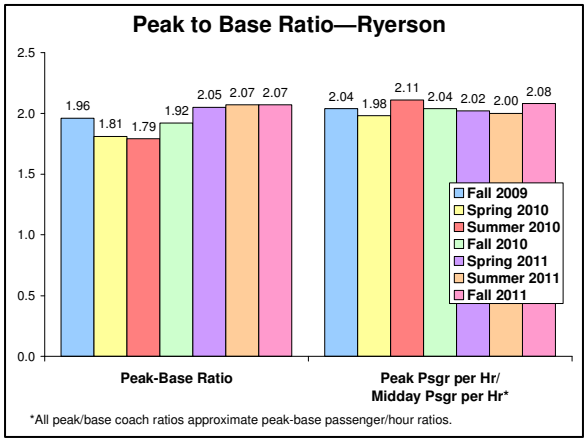
Deadhead Miles per Revenue Mile
Deadhead miles per revenue mile increased to 0.23 in Fall 2011.



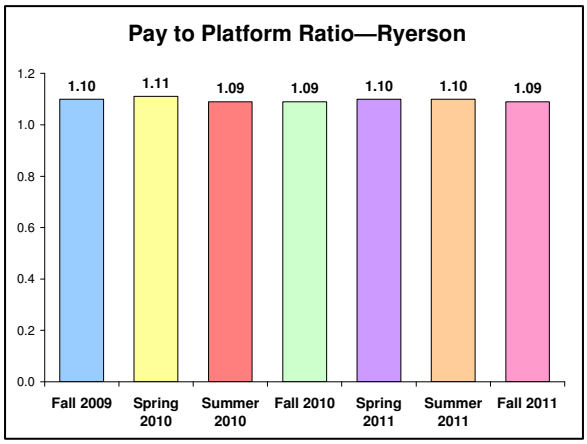
Distribution of Scheduled Layover by Length of Layover
The number of layovers longer than 40 minutes increased slightly in Fall 2011. There were minor changes in distribution of layovers between 5 to 30 minute long.



Peak to Base Ratio
The peak to base ratio remained steady at 2.07 in Fall 2011. The peak to base passengers ratio increased to 2.08 for Fall 2011 and data continue to show well-matched service and ridership.

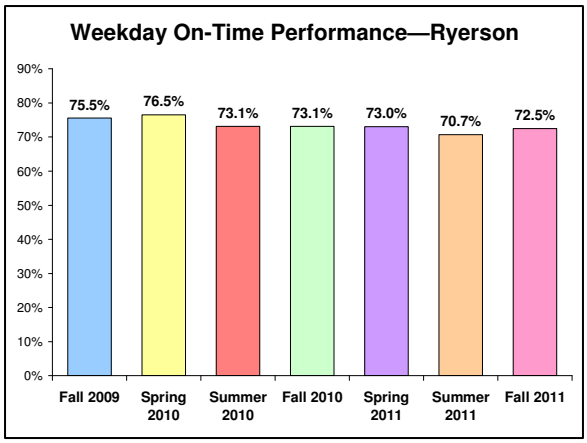


Pay to Platform Ratio
The pay to platform ratio decreased to 1.09 in Fall 2011.



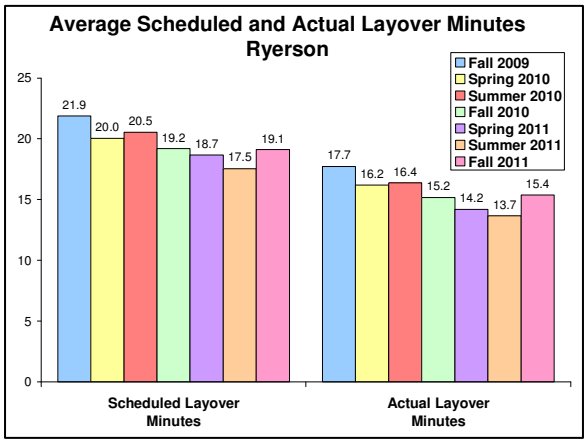
On-time Performance

On-time performance improved to 72.5 percent in Fall 2011, but remains below the baseline period and the prior year. Ryerson had the worst on-time performance of any base.

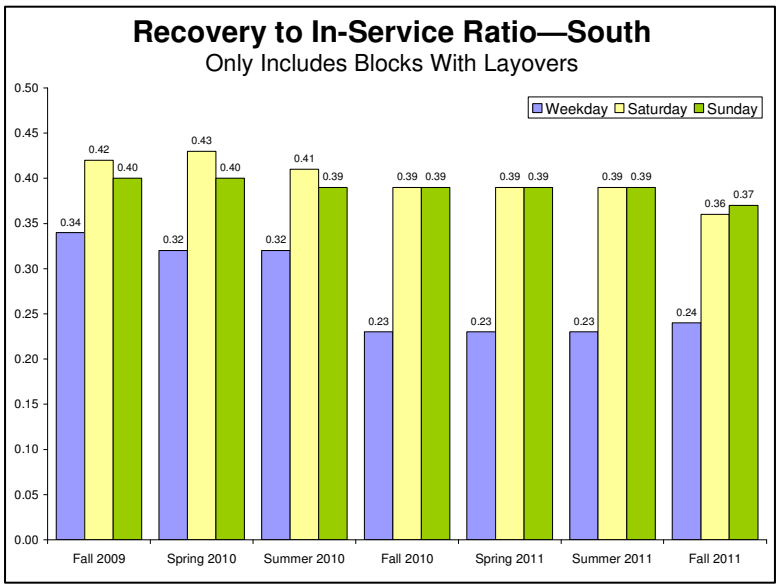


Average Scheduled Layover and Average Actual Layover

Average scheduled layover increased to 19.12 minutes and actual scheduled layover increased to 15.38 minutes continued to decrease in Fall 2011. Ryerson Base had the longest average scheduled layovers in Fall 2011.

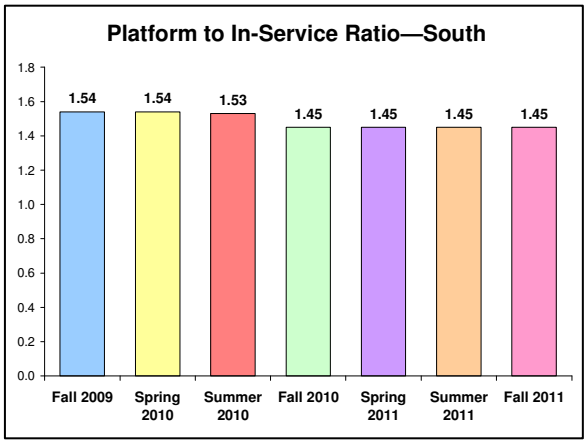


South Base



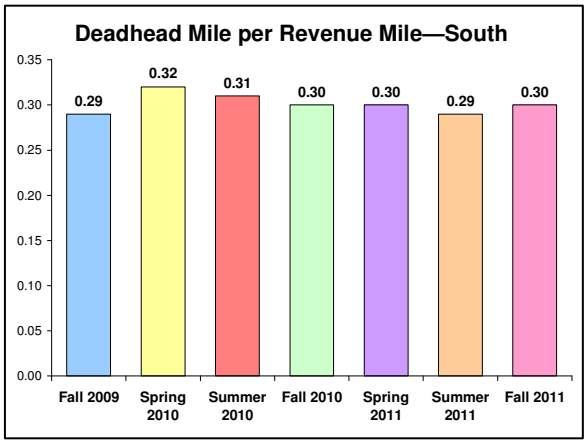
Recovery to In-Service Ratio

The recovery to in-service ratio increased to 0.24 in Fall 2011.



Platform to In-Service Ratio

The platform to in-service ratio remained steady at 1.45.

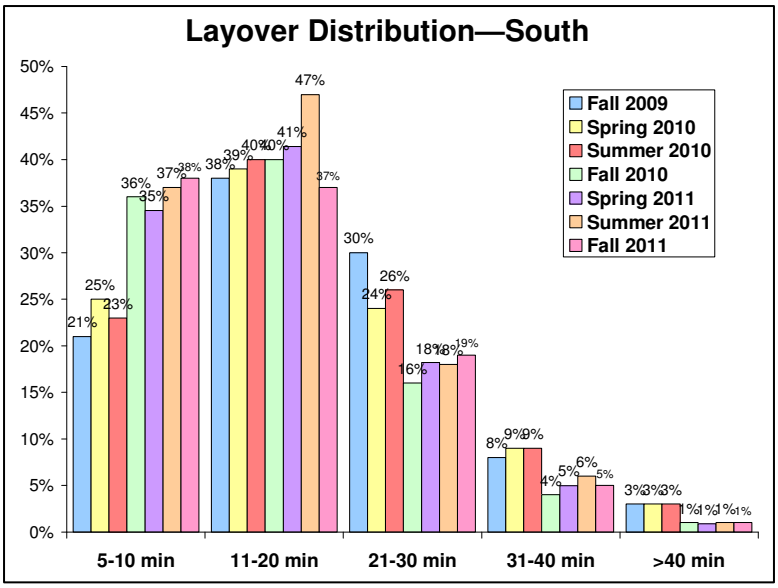


Deadhead Miles per Revenue Mile

Deadhead miles per revenue mile increased slightly to 0.30 in Fall 2011.

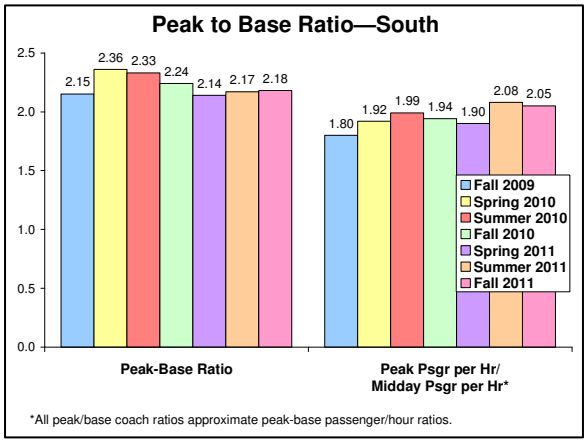
Distribution of Scheduled Layover by Length of Layover

The number of layovers longer than 40 minutes remained steady in Fall 2011. There was a decrease in the number of layovers between 11 and 20 minutes long.



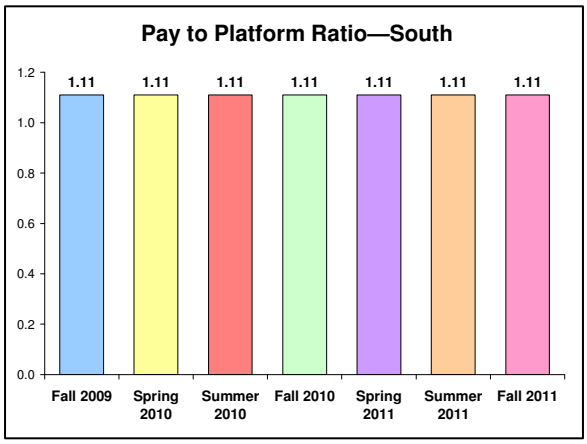
Peak to Base Ratio

The peak to base ratio increased slightly to 2.18 in Fall 2011. Passenger data showed a ratio of 2.05 peak passengers per hour to midday passengers per hour for Fall 2011. The ratio of service provided in the peak remains higher than the ratio of ridership in the peak, but the ratios are more well-matched than they were in 2009.



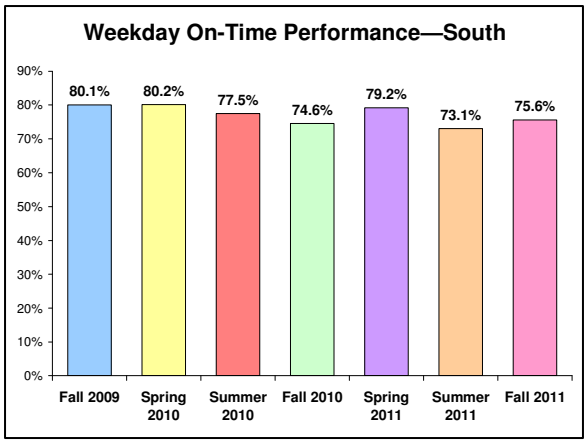
Pay to Platform Ratio

The pay to platform ratio remained steady in Fall 2011, and has not changed since the baseline period.



On-time Performance

On-time performance improved to 75.6 percent in Fall 2011. This is better than the prior year but remains below the baseline period.



Average Scheduled Layover and Average Actual Layover

Average scheduled layover decreased slightly to 14.08 minutes and average actual layover decreased slightly to 13.47 minutes in Fall 2011.