



## Board Report

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### AD HOC CUSTOMER EXPERIENCE COMMITTEE JULY 20, 2017

**SUBJECT: BUS SYSTEM SPEED AND ON-TIME PERFORMANCE**

**ACTION: APPROVE ACTION PLAN TO IMPROVE TRANSIT SYSTEM SPEED AND ON TIME PERFORMANCE**

#### **RECOMMENDATION**

CONSIDER:

- A. RECEIVING AND FILING status report on Bus System Speed and On-Time Performance.
- B. AUTHORIZING the Chief Executive Officer to Develop a Plan to improve speed and on-time performance on key corridors of the Metro transit system, including:
  - Identify the top ten key transit corridors that will benefit the most from speed and on-time performance improvements; and
  - For each corridor, identify the congestion hot spots, develop a series of traffic signal, transit priority, and operational solutions, and evaluate the costs and benefits of solutions.

#### **ISSUE**

In the last five years, Metro and other operators have seen significant declines in the use of their bus systems. Even with the excellent performance of the new rail lines added to the region, bus system use continues to decline. Metro has expanded its peak 15 minute network to include 72 bus lines, added service to the Rapid network, and recently initiated 24-hour service on both the Metro Orange and Silver Lines. As one factor of the overall discussion concerning ridership loss, it has been argued that both the speed and reliability of the Metro system has declined. This report explores the issue of declining operating speeds and the associated impacts on service reliability.

#### **DISCUSSION**

The primary question that staff seeks to answer is what the agency can do to make the underlying bus system more attractive and useful to our customers. Metro is emphasizing the reduction in bus operating speed because as speeds decrease, the agency must spend more resources to maintain current service. In addition, as speeds decline, the attractiveness of transit is also impacted. Reasons why system speeds have decreased include:

- Increase in Traffic Congestion** - Traffic congestion has reduced the effectiveness of transit service countywide. In support of that assertion, Figure 1 presents the trend in vehicle hours of delay which is shown to be increasing statewide. Transit speeds have likewise deteriorated. Figure 2 shows that Metro bus speeds were highest in 2003. Since that time, average bus speeds have declined 15% for weekday services and 16% for weekend services.

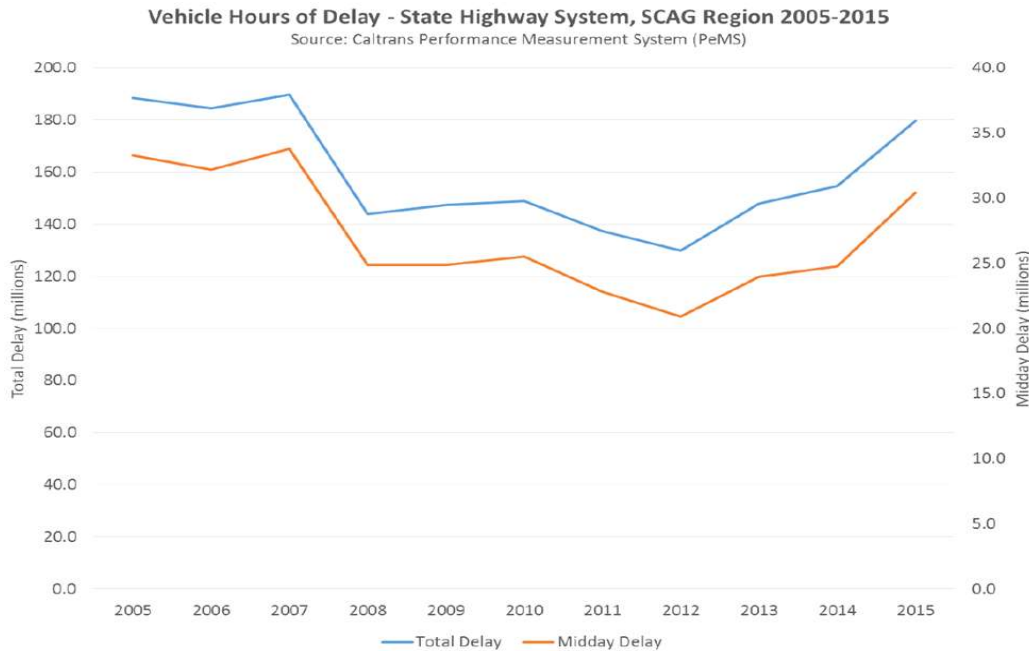
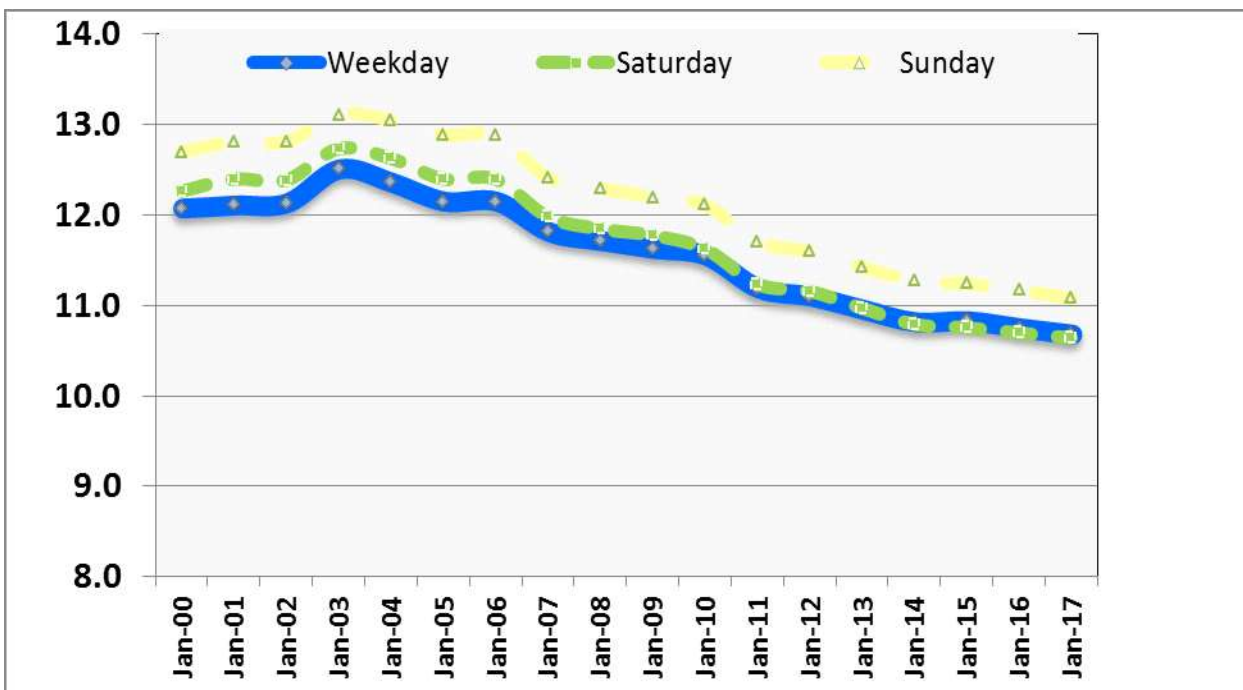


Figure 1

Simply put, the bus takes too long to get to necessary destinations; since 2003 the average speed on our bus system has declined between 15 and 16%. When this added burden of slowness of the operation is combined with one or more transfers, transit becomes increasingly less desirable.

Figure 2 - Metro Bus Average Schedule Bus Speed Trends  
 Source: Metro Service Planning, March 2017

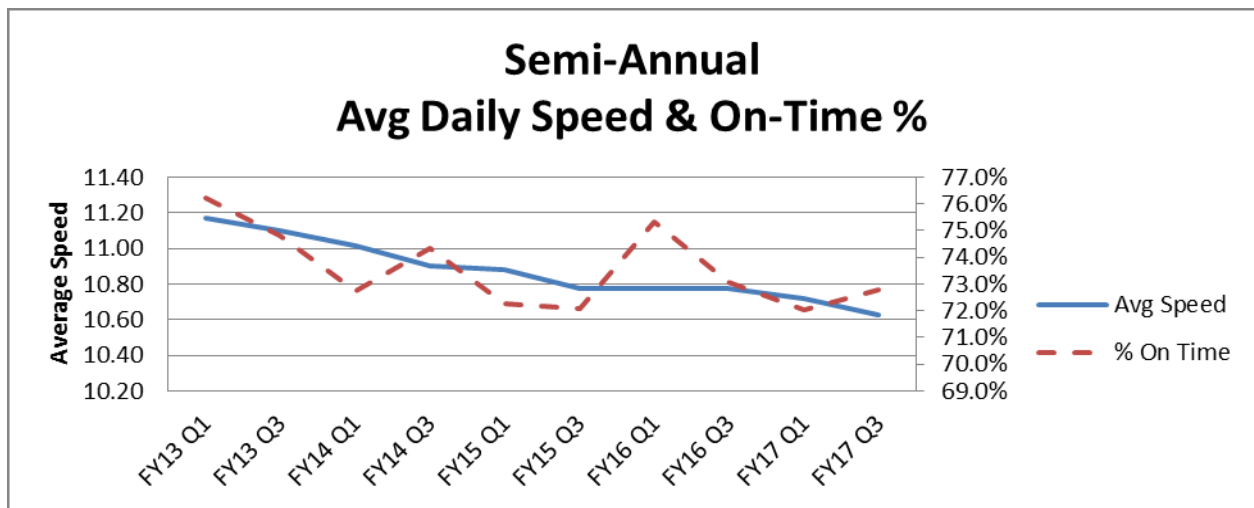


- Cities have inaugurated a variety of programs to calm traffic** - which restrict flow. For example, the City of Pasadena is attempting to create a more pedestrian friendly zone along Colorado Boulevard, reducing lanes for traffic and encouraging walking and bicycling instead. These restrictions hamper bus movements in particular and either force bus routes to shift away from the desired destinations of bus riders or create greater inconvenience for those that use transit. The City of Los Angeles has created a number of these zones on Broadway and is proposing to do so on other traditionally heavy bus transportation corridors, e.g. Soto Street.

**Impact of Declining Bus Speed on Service Reliability**

Figure 3 demonstrates that the declines in bus speed are accompanied by declines in on-time performance.

Figure 3



Figures 4 and 5 illustrate that this phenomena is also occurring on weekends when average operating speeds are slightly higher, but also declining.

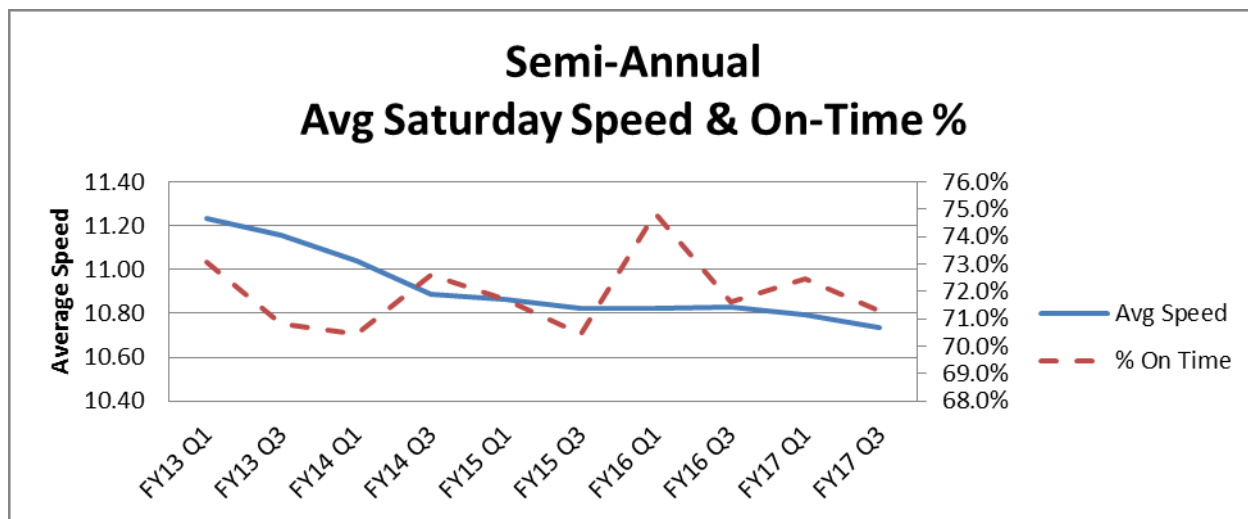


Figure 4  
Figure 5

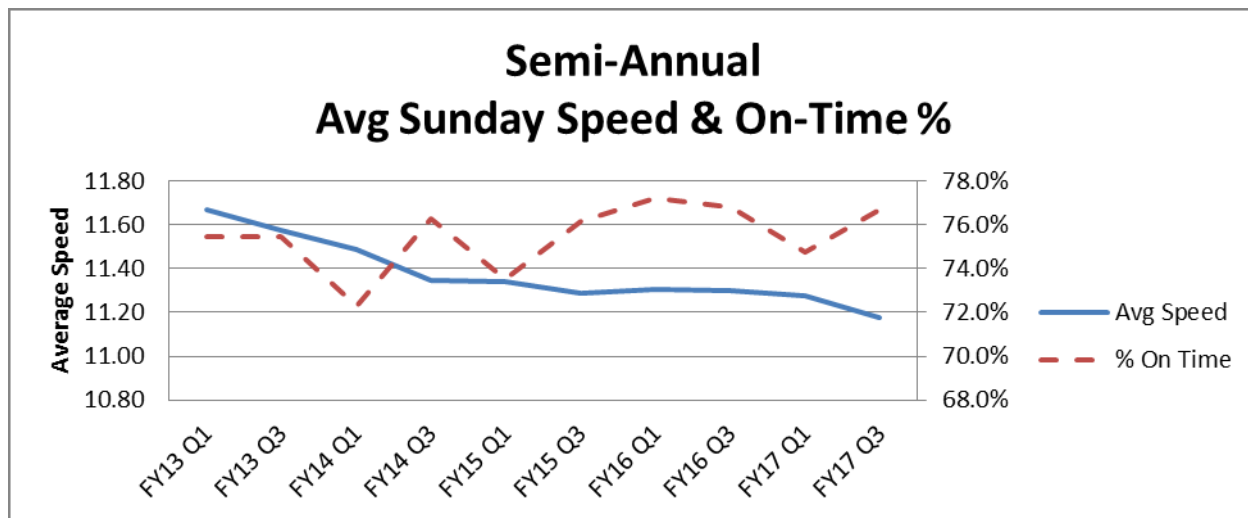
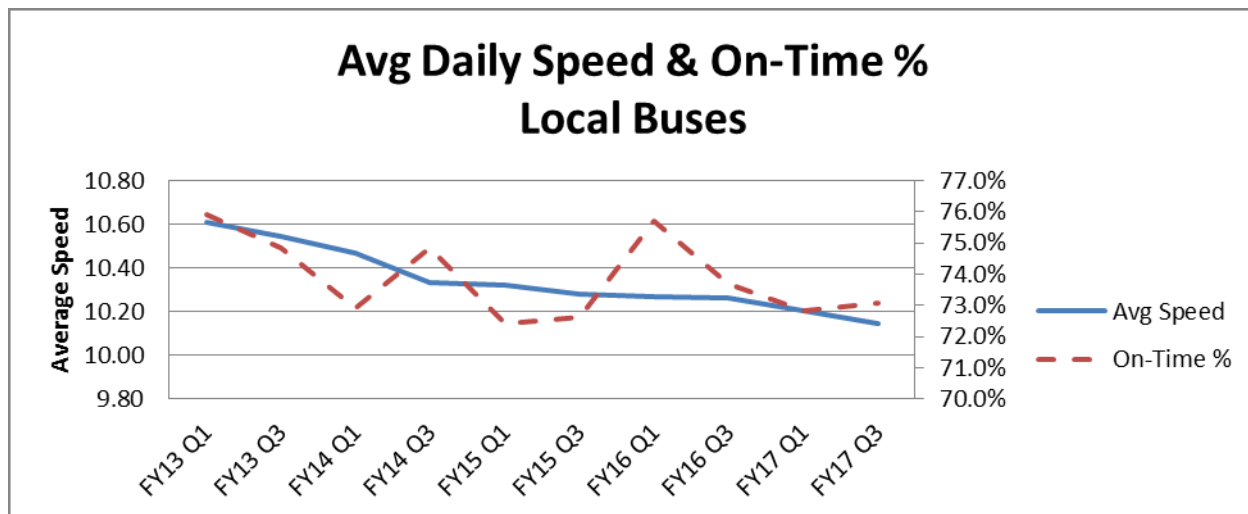
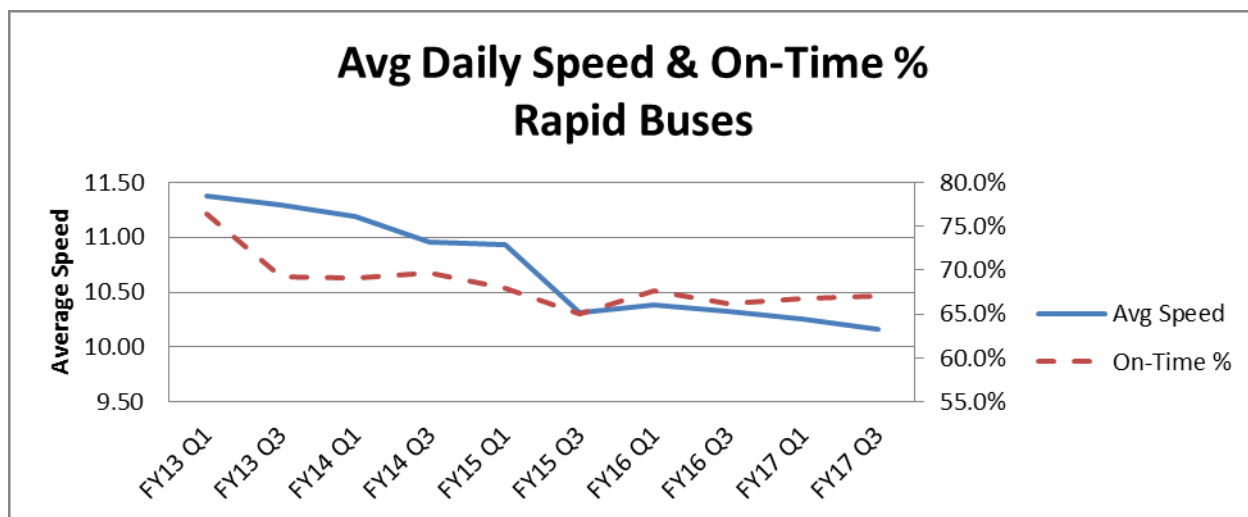
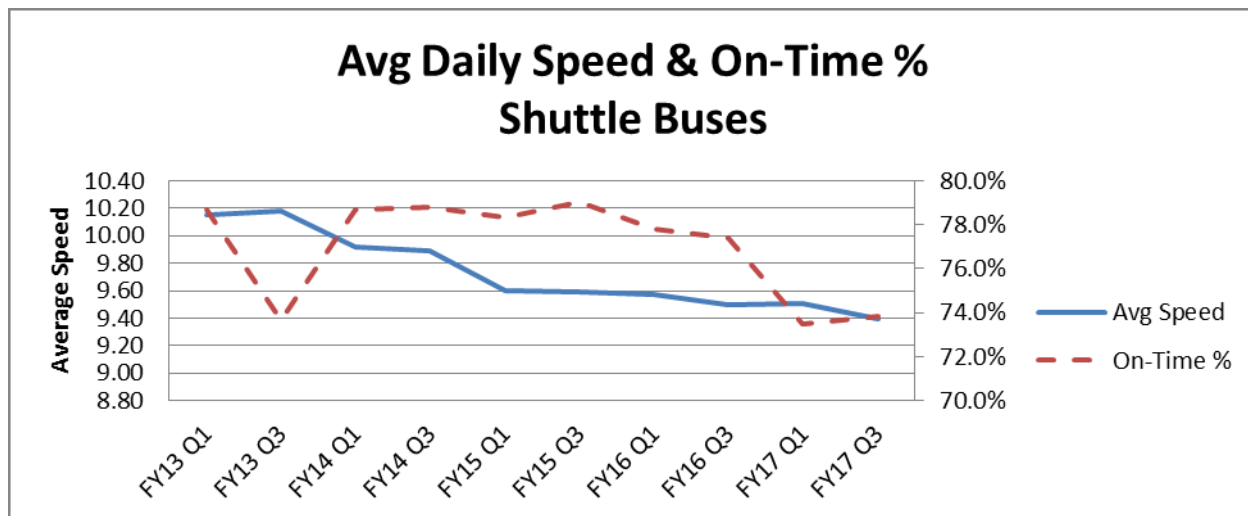
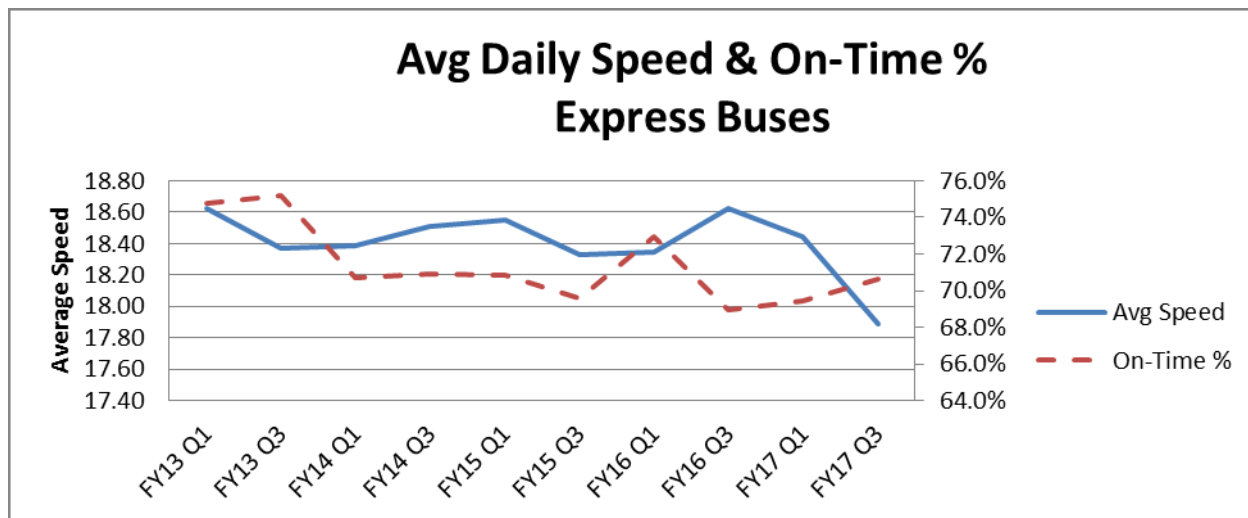
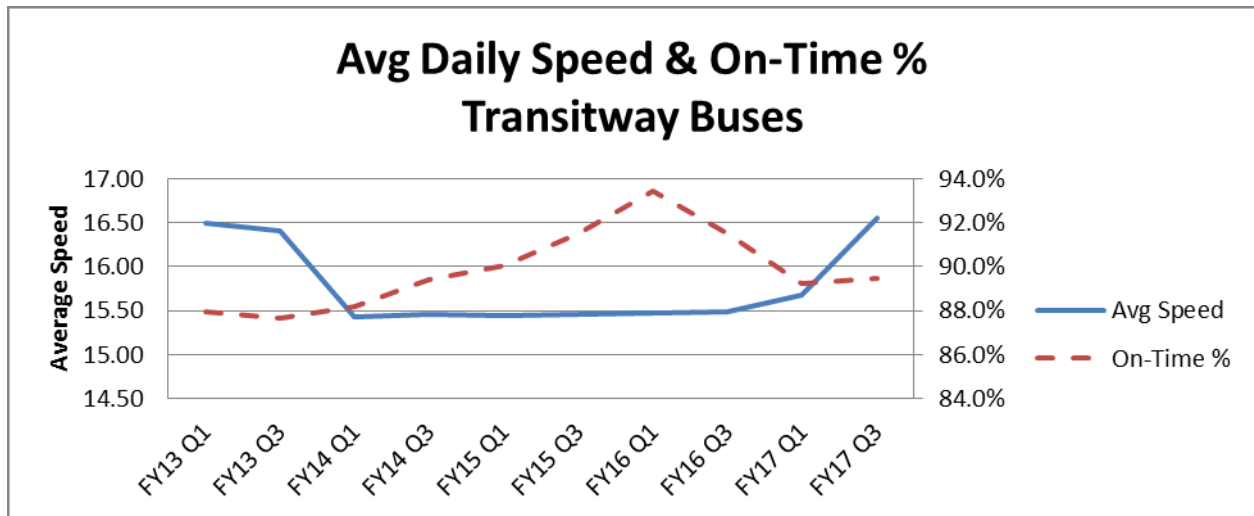


Figure 6 shows that all service types are affected with Rapid bus services experiencing the greatest decline in speed and on-time performance over the last five years. Competing demands for signal priority and encroachment of bus lanes have reduced the speed advantage of Rapid bus compared with local buses. Only the Orange Line (Transitway service type) has been able to maintain speed (after a period of construction) and a high level of on-time performance largely because it operates in a restricted right of way over much of its length.

Figure 6







When we look at the most highly impacted services in terms of declining bus speed (Table 1) and declining on-time performance (Table 2), the impact on Rapid bus service is very evident with four of the five greatest speed declines, and six of the 10 greatest declines in on-time performance, occurring on Rapid routes.

Table 1

Line	Description	Avg Revenue Speed (mp)			Avg Annual Speed Change
		FY13 Q1	FY17 Q3		
Numbers reflect average weekday speeds					
750	Ventura BI Rapid	13.97	8.80	-4.1%	
760	Long Beach BI Rapid	10.11	6.88	-3.5%	
757	Western Av Rapid	10.74	8.17	-2.7%	
745	Broadway Rapid	11.20	9.20	-2.0%	
442	Manchester BI Express	14.24	11.85	-1.9%	
733	Venice BI Rapid	11.62	9.81	-1.7%	
292	Sylmar - Burbank via Glenoaks BI	14.10	12.02	-1.6%	
237	Mission Hills - Hollywood	12.84*	12.24	-1.6%	
254	Boyle Hghts - 103rd St Station	11.96	10.38	-1.5%	
33	LA - Santa Monica via Venice BI	10.82	9.44	-1.4%	

\*Route commenced operation in FY16 Q1  
- data reflects first quarter average speed

Table 2

Line	Description	Avg On-Time %		Avg Annual Abs % Change
		FY13 Q1	FY17 Q3	
Numbers reflect average weekday performance				
788	Valley - Westside Express	79.2%*	59.2%	-6.6%
741	Reseda BI Rapid (discontinued)	88.6%	75.0%**	-3.4%
102	LAX - Southgate	79.3%	52.7%	-2.9%
237	Mission Hills - Hollywood	85.0%*	76.7%	-2.8%
177	JPL - PCC College	95.1%	71.6%	-2.6%
734	Sepulveda BI Rapid	84.5%	63.2%	-2.4%
607	Windsor Hills - Inglewood Shuttle	93.3%	73.5%	-2.2%
754	Vermont Av Rapid	82.1%	63.4%	-2.1%
757	Western Av Rapid	81.1%	62.8%	-2.0%
760	Long Beach BI Rapid	80.2%	62.5%	-2.0%

\*Route commenced operation in FY16 Q1 - data reflects first quarter performance  
 \*\*Route was last in operation in FY15 Q1 - data reflects last quarter performance

Metro has had to add revenue hours of service to maintain service frequencies despite declining operating speeds. These added revenue hours have amounted to about one percent of bus service hours per year. Since service hours have been capped by budget considerations in recent years, the added hours have to be offset by reducing services in lesser-used corridors in order to maintain frequencies in the more heavily patronized corridors. Table 3 quantifies this impact.

Table 3

	FY12 to FY17 Q3 Daily Excess Rev Hours	FY16 to FY17 Q3 Daily Excess Rev Hours	FY15 to FY16 Q3 Daily Excess Rev Hours	FY14 to FY15 Q3 Daily Excess Rev Hours	FY13 to FY14 Q3 Daily Excess Rev Hours	FY12 to FY13 Q3 Daily Excess Rev Hours
Daily	1,240	291	-	248	93	309
Saturday	768	129	-	91	51	197
Sunday	622	127	-	62	28	205
Annual Excess Revenue Hours	392,178	8,309	-	71,416	31,587	100,866
Annual Added Cost	\$64,709,436	\$14,570,985	\$0	\$11,783,673	\$21,711,806	\$16,642,956

On average, about 80,000 hours were added each year between FY12 and FY17 to maintain schedules. Based on the FY17 budget of \$165 per revenue service hour, this equates to an increase of \$13 million per year in increased operating costs. Therefore, the cumulative impact over the past 5 years is \$65,000,000 in additional operating cost for FY17 compared to FY12. These are resources



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that could have gone to maintaining or improving the bus network were it not for the impact of traffic on bus speeds and reliability.

### **Action Plan to Improve Speed and On-Time Performance**

The path forward is to work with local jurisdictions to identify congestion hot spots and come up with short/mid/long term solutions. Metro needs the commitment of local jurisdictions and funding to fix this problem. One-time capital expenditures to implement transit priority solutions will be far less costly than the ongoing operating expense to address speed and reliability declines as a result of adding more service hours to provide the same service. In addition slower and less reliable service will result in less ability to attract and retain ridership.

Unlike other transit agencies such as SF Muni, King County Metro, and Chicago Transit Authority, Metro does not have an in-house traffic engineering department with expertise in traffic signal optimization, intersection and street configuration, transit signal priorities, and traffic modeling and analysis which is dedicated to working with local jurisdictions on improving speed and on-time performance issues across the system. In addition, many jurisdictions do not have the staffing capacity to provide significant assistance in these efforts. Therefore, as a first step in working with local jurisdictions on such improvements, staff will secure the assistance of a full time contractor with expertise in traffic engineering and operations to advance efforts for improving speed and on-time performance on key corridors within the Metro system.

### **DETERMINATION OF SAFETY IMPACT**

The receipt of this report has no safety impact to the system or customers.

### **FINANCIAL IMPACT**

The costs associated with the development of the plan are included in the FY18 budget.

### **ALTERNATIVES CONSIDERED**

The alternative to not advancing solutions to improve system speed and on-time performance is to continue to schedule additional resources to operate existing services. However, this alternative is not recommended as it will continue to increase the operating cost of the transit system, limit the opportunity to apply resources to better use, and reduce the desirability of Metro's transit services.

### **NEXT STEPS**

Staff will return to the Board within six months on the status of improving speed and on-time performance of the Metro transit system.

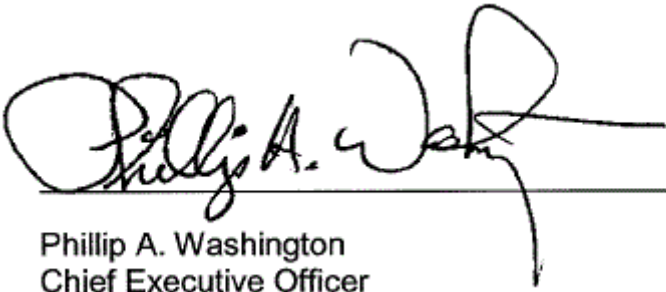
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