



Metro

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JULY 19, 2011

TO: BOARD OF DIRECTORS

THROUGH: ARTHUR T. LEAHY *by RST*
CHIEF EXECUTIVE OFFICER

FROM: MARTHA WELBORNE, FAIA *MM*
EXECUTIVE DIRECTOR, COUNTYWIDE PLANNING

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CHIEF OPERATIONS OFFICER

**SUBJECT: COUNTYWIDE LIGHT RAIL YARD COST ALLOCATION AND FIRST
DECADE CAPITAL FUNDING**

ISSUE

At the Board Staff Briefing on July 14, 2011, additional information was requested related to the Countywide Light Rail Yard Cost Allocation staff report. This report provides answers to those questions.

DISCUSSION

1. What are the relative schedules and timelines for heavy rail system improvements assumed in the Long Range Transportation Plan (LRTP), the 30/10 Plan, and if they are deferred? Why and when are these projects needed?

If the projects are deferred as recommended, the working assumptions for their revised schedule are shown in Attachment B-4 of the original staff report. The actual deferred schedules will be determined through a series of updates to the LRTP, the Transportation Improvement Program, and the budget.

Please see Attachment A for the LRTP, LRTP Priorities, and 30/10 Plan financial modeling assumptions. Note that the 2009 LRTP was updated to reflect the lowered sales tax forecasts in March of 2010. This update is reflected in the table as the "LRTP Priorities" section.

For the Red and Purple lines to provide the future operations assumed in the LRTP, the following five system improvements will be needed:

- A. *North Hollywood Terminal: Add one crossover and two 6-car tail tracks and one 6-car half-pocket track. This must allow for a 6-car train to be stored on any track north of the station, as well as access from any tail-storage track to any platform track. One of these tracks will be required for a gap train.*
- B. *Union Station-Division 20: Upgrade and establish a mainline turnaround including consideration of two mainline tracks east of Division 20 to facilitate rapid and efficient turn-around of the Red Line train sets and to allow Union Station to operate as a “through” station for operations. There will need to be a series of “tail tracks” and crossovers available to facilitate turn-backs given the scope of service for 2030 at 5 minutes to North Hollywood and 10 minutes to Wilshire Western (2.5-2.5-5; 2.5, 2.5, 5 headway). Six-minute North Hollywood service will be on the table in the next few years. 3-3-6, 3-3-6 headway will be difficult to manage with the current configuration.*
- C. *Train Control to support 2.5-minute headway in trunk and 5-minute headway on either branch. A scheduled 2.5-minute headway will require the ability to operate about 30% better than the scheduled headway, to allow for delays and make-up time.*
- D. *Traction Power to support 2.5-minute headway in trunk and 5-minute headway to North Hollywood. A scheduled 2.5-minute headway will require the ability to operate about 30% better than the scheduled headway, to allow for delays and make-up time.*
- E. *Ventilation System/Shaft to support 2.5-minute headway in trunk and 5-minute headway to North Hollywood (ventilation shaft between Hollywood/Highland and Universal and ventilation equipment between Universal and North Hollywood). This is necessary to improve service below every six minutes. Even at six minutes, there is minimal opportunity to recover a delayed schedule.*

To a degree these improvements above can be deferred. However, there are parallel needs for replacement of existing life-expired and/or unsupported equipment. For example, the existing Division 20 traction substation is in poor condition and needs replacement. This could be performed independently of Westside/LRTP. However, that would lead to greater overall cost to modify the new substation for Westside at a later date. Cost efficiencies can be realized by combining existing equipment replacement with Westside-ready upgrade at the same time. In addition, Metro is striving to improve existing revenue service, but that is being stymied by existing system capacity, especially in train control and ventilation systems.

- 2. *The impact on 30/10, in terms of system readiness, of the heavy rail system improvements.*

If the existing system is not upgraded in the key areas of traction power, ventilation and train control, then the service level that will be supported will, largely, be no greater than what Metro currently operates. If our financial plan does not reflect the improvements necessary to support a greater level of service on the accelerated

30/10 schedule, that deficiency could negatively impact the ridership growth upon which our New Starts application is based and thus may result in jeopardizing our request for accelerated Federal funding.

3. Regarding the 2 ½ minute headways on the Red and Purple lines, explanation of the frequency of service in each direction, when the 2 ½ minute headways will begin and why, and ridership.

That portion of the Purple and Red lines that run contiguously is referred to as a trunk. Where they do not run contiguously, they each form a branch. Currently, the branches are each running on ten-minute headways during peak hours, meaning that the trunk is running at five-minute headways. We are currently preparing the system to run at 7 ½-minute headways in the branches and 3 ¾ minutes in the trunk. Further preparations will make future improvements to six minutes in the branches and three minutes in the trunk possible.

After that, moving to five-minute headways in the branches and two and one half minutes in the trunk will require some of the improvements discussed in question #1 above. Ultimately, the ridership level anticipated in the LRTP and New Starts applications is four minutes in the subway branches and two minutes in the trunk. This ultimate level of service will require all of the improvements in the answer to question #1. Our best information suggests that when the Westside Subway opens to Century City, five minute headways or less on the subway branches will be necessary. In the LRTP, the Century City segment of the Westside Subway is scheduled to open in FY 2026. If the 30/10 Plan were to be implemented, the Century City segment could open as early as FY 2020.

4. Fire-life safety staff's previously expressed concerns regarding safety issues if there are delays to some of the heavy rail system improvements.

Trains in the tunnel must have a ventilation path for safety. To provide for that fire-life safety compliance, we cannot run more than one train per tunnel between two stations. To get more than one train per tunnel between stations, we will need to increase the ventilation available in any portion of the tunnel whose running time exceeds the desired headway, plus a margin for service variations. For our system, ventilation is needed before we begin 4-minute headways in the Red Line branch to North Hollywood. By the time headways are increased to five minutes on the branches (roughly twice the service running today), we'll need to seriously consider the timing of adding the ventilation and other improvements necessary to operate the increased headways.

5. On Attachment A, Cost Allocation Table, explanation of why the existing Gold and Green Lines will have more service.

As the rail system expands, more riders are attracted by the greater number of destination stations. Opening new rail extensions attracts new riders throughout the system, not just on the new line being opened. The added rail cars assumed on the

existing rail lines are to serve the added ridership attracted by a larger number of destination stations.

6. Regarding the Santa Monica yard on Attachment A, Cost Allocation Table, explanation of the 28-car difference between the 48-car capacity and the 76 cars assigned to Expo.

After accounting for the 12 cars on the storage track on Expo Phase 1, the ultimate Exposition LRT project to Santa Monica will require 76 cars, not 88. The 48-car storage at the Expo yard, when added to the 12 storage yard spaces, adds to 60 -- 16 cars short of the ultimate need, not 28. The extra 16 cars can ultimately be absorbed into existing rail yards.

ATTACHMENT(S)

- A. Timelines and costs in LRTP Financial Forecasts

Heavy Rail System Improvements in LRTP Financial Forecasts

ATTACHMENT A

(\$ in millions)	Total	Subtotal '10-'19	Subtotal '20-'31	2009 2010	2010 2011	2011 2012	2012 2013	2013 2014	2014 2015	2015 2016	2016 2017	2017 2018	2018 2019	2019 2020
Adopted LRTP (October 2009)														
Red Line - North Hollywood terminal	94.2	94.2	-			-	-	22.5	23.2	23.9	24.6	-	-	-
Red/Purple Line - Union Station upgrade Div 20	113.6	113.6	-	8.8	12.6	13.3	21.8	25.8	31.3	-	-	-	-	-
Red/Purple Line - Train Control for 2.5 min trunk headways	59.8	59.8	-			-	-	-	17.4	23.9	18.5	-	-	-
Red/Purple Line - Traction Power to support headways	94.2	94.2	-			-	-	22.5	23.2	23.9	24.6	-	-	-
Red Line - Ventilation System - North Hollywood	169.3	162.6	6.7			-	-	22.5	29.0	35.8	36.9	25.3	13.1	6.7
Total	531.1	524.4	6.7	8.8	12.6	13.3	21.8	93.3	124.1	107.5	104.6	25.3	13.1	6.7
		-	-											
LRTP Priorities (Yellow Book, April 2010)														
Red Line - North Hollywood terminal	94.2	94.2	-						22.5	23.2	23.9	24.6		
Red/Purple Line - Union Station upgrade Div 20	113.6	113.6	-						23.9	29.0	29.9	30.8		
Red/Purple Line - Train Control for 2.5 min trunk headways	59.8	59.8	-						-	17.4	23.9	18.5		
Red/Purple Line - Traction Power to support headways	94.2	94.2	-						22.5	23.2	23.9	24.6		
Red Line - Ventilation System - North Hollywood	169.3	169.3	-					5.1	24.1	29.0	35.8	36.9	38.4	
Total	531.1	531.1	-	-	-	-	-	5.1	93.0	121.8	137.4	135.4	38.4	
		-	-											
30/10 Plan (August 2010)														
Red Line - North Hollywood terminal	94.2	94.2	-						22.5	23.2	23.9	24.6		
Red/Purple Line - Union Station upgrade Div 20	113.6	113.6	-						23.9	29.0	29.9	30.8		
Red/Purple Line - Train Control for 2.5 min trunk headways	59.8	59.8	-						-	17.4	23.9	18.5		
Red/Purple Line - Traction Power to support headways	94.2	94.2	-						22.5	23.2	23.9	24.6		
Red Line - Ventilation System - North Hollywood	169.3	169.3	-					5.1	24.1	29.0	35.8	36.9	38.4	
Total	531.1	531.1	-	-	-	-	-	5.1	93.0	121.8	137.4	135.4	38.4	