

**Board Report**

File #: 2015-0612, **File Type:** Informational Report**Agenda Number:** 33.

**SYSTEM SAFETY, SECURITY AND OPERATIONS COMMITTEE
JUNE 18, 2015****SUBJECT: BOARD MOTION 21 - SILVER LINE SERVICE IMPROVEMENTS AND CONNECTIONS****ACTION: RECEIVE AND FILE****RECOMMENDATION**

RECEIVED AND FILED report responding to **Motion 21: Bus Rapid Transit Service - Silver Line**, brought forward at the February 2015 System Safety, Security and Operations Committee.

ISSUE

The Board approved Motion 21 in February 2015, directing staff to improve connections between the Silver Line and service operating into South Bay communities via the Harbor/Gateway Transit Center (H/GTC). Staff was asked to evaluate a number of service options to improve frequencies of local connections and improve timed transfers. These options would be presented with resource requirements, ridership impacts, and implementation schedule. In addition, staff was to coordinate with the South Bay Municipal Operators including Torrance, Gardena, Beach Cities Transit and other relevant stakeholders.

BACKGROUND

The Silver Line concept began as early as 1994, as the Harbor Transitway was being constructed by Caltrans. The concept, known then as the "dual hub", was to consolidate a number of express lines serving El Monte Station and the H/GTC into one frequent express service. However, this concept was not implemented at that time. Since then, Metro began operating the Silver Line in December 2009, providing daily service between El Monte Station and H/GTC through Downtown Los Angeles.

Currently, the Silver Line operates as a Bus Rapid Transit (BRT) provides a simple rail like routing with a frequent (five minute peak and 15 minute mid-day) service. Ridership has grown steadily from 6,500 on an average weekday to over 15,500. Ridership has grown the quickest on the Downtown to H/GTC route segment: from about 3,000 per average weekday when the Silver Line first began to nearly 6,500 in March 2015. There are now slightly more passengers on the South Bay side of the Silver Line than on the San Gabriel side. Currently all Silver Line trips operate between the H/GTC through Downtown LA to El Monte Station, with limited stops in Downtown LA. This routing has

eliminated transfers in Downtown LA, and provides BRT connections to all of the Metro Rail lines. A detailed history describing the planning and implementation of the Silver Line can be found in **Attachment B**.

The Silver Line has become successful and this success can be measured by the following advantages and service improvements:

- Patronage has grown over 135% since inception in December, 2009;
- Ridership from the H/GTC to Downtown LA has recently exceeded ridership on the El Monte Busway side of the line;
- Separating the local and express portions of the old routes has improved on-time performance on the now local or limited lines ;
- The Silver Line has existing late night timed connections with the Metro Green Line;
- Local buses currently have scheduled connections to the Silver Line;
- Unique Silver Line branding makes the buses identifiable;
- Due to the Silver Line’s frequency, G-Trans (Gardena) has routed local buses and some of their express services to the H/GTC, thereby reducing duplicative service on the Harbor Transitway, and providing better connections for South Bay residents. Torrance Transit will also introduce Line 4 mid-day service which will terminate at the H/GTC;
- The popularity of the Silver Line has increased the use of the H/GTC park-ride lot from one that was ¼ full, to one where finding an empty parking space is difficult; and;
- Improvements at the H/GTC (construction of a Sheriff’s substation, public toilet, new graphics and signage) and at stations (improved lighting/sound walls/bus stops) located on the Harbor Transitway have improved transit usage, as shown below:

Harbor Transitway Ridership Increases by Station

Harbor Transitway Station Stop	2009 Prior to Silver Line	2014 With Silver Line	5 Year Growth Factor
Harbor/Gateway TC	1,215	3,439	2.83
Rosecrans Station	113	388	3.43
Harbor Green Line	694	1,510	2.18
Manchester Station	131	542	4.13
Slauson Station	112	364	3.25
37th St/USC Station	70	220	3.15
TOTALS	2,335	6,463	2.77

DISCUSSION

The Board Motion directed staff to evaluate the following five service change options to improve connections between the Silver Line and service operating into South Bay communities via the H/GTC:

A. Direct routing of Silver Line trips into Palos Verdes and San Pedro.

Line 450 (Downtown LA - San Pedro via Harbor Transitway) currently provides peak period alternating trips between San Pedro and Downtown LA thru H/GTC. During mid-days and weekend this line provides service between H/GTC and San Pedro via the Harbor Freeway.

Line 246 (San Pedro - Harbor Gateway TC via Avalon BI) provides local stop service from San Pedro to the H/GTC. This service takes about one hour and seven minutes to make that journey during rush hours.

Line 344 (Palos Verdes - Harbor Gateway TC via Hawthorne BI) provides limited stop service along Hawthorne BI while Torrance Transit Lines 4 and 8 provide local service. Line 344 currently takes up to one hour and twenty minutes each way.

The Silver Line currently takes one hour and six minutes to travel from H/GTC to El Monte Station during peak hours.

In order to extend Silver Line trips from H/GTC without a significant increase in operating cost and buses, the duplicate service on Lines 246 and 344 would need to be canceled. New combined Silver Line and Lines 246 and 344 will have one-way trips of nearly two hours and thirty minutes in each direction. It would be difficult to schedule Bus Operator work schedules that would be efficient. Also as the Silver Line operates five minute frequency service during rush hours, with heavy passenger loads, a bus from PV or San Pedro that was even a few minutes late would create significant overloads.

Should the Silver Line be extended, the quality of service would degrade on both the Express and Local portions of the route. Currently, local patrons enjoy excellent on-time performance, which is up to 80% on Line 344. Neither of the two local lines is currently affected by freeway issues (accidents, closures, downtown LA protest, rain delays, etc.) that would cause local patrons on-time reliability issues. If the Silver Line is extended to replace the local/limited stop lines, the OTP would also be negatively affected by an increase in periodic overcrowding. The patronage chart shown below in Section B indicates that the majority of patrons on the local lines could be affected by service delays north of the H/GTC

Timed transfers (when the headways are wider) give patrons a short wait to board the Silver Line.

B. Improved frequencies on local services Lines 246 and 344 for better connections with the Silver Line.

Today, service on these lines operates every 20 to 30 minutes in the peak periods; weekday mid-day service is provided on an hourly basis. On Saturdays service is every 40 minutes, while on Sundays & holidays buses operate hourly service.

During these long headway periods, service on these lines is scheduled to provide a timed transfer to and from the Silver Line to provide a shorter wait time at the H/GTC.

Ridership on all local lines traveling up to the H/GTC is low. The chart below shows that a large number of patrons boarding buses in San Pedro and Palos Verdes are not destined to Downtown LA. On both lines, more than 70 to 80% of the patrons are riding locally, with only the remainder 20 to 30% destined to the H/GTC. Even upon arrival at the Center, it is not known how many patrons continue on the Silver Line, or utilizes the other 11 lines at the Center.

Line 246

			% NOT Going to H/GTC	% GOING to H/GTC
	Ons	Offs		
Weekday	1397	317	79%	21%
Saturday	883	243	72%	28%
Sunday	675	188	72%	28%

Line 344

			% NOT Going to H/GTC	% GOING to H/GTC
	Ons	Offs		
Weekday	851	297	65%	35%
Saturday	553	193	65%	35%
Sunday	330	98	70%	30%

While service levels on both lines could be improved during weekday mid-day and weekends to operate every 30 minutes, ridership demand, as shown above, does not warrant additional service. The estimated additional service hours and costs are shown below in the Recommendation portion of this report. If approved by the Board, these proposed changes could be implemented as part of the December 2015 schedule change program. Should the changes require a Public Hearing and and/or Title VI analysis, additional service could be implemented on a demonstration basis until the hearings could take place.

C. Timed transfers and improved on-time performance to ensure connections are met.

Currently, timed transfers are in place at H/GTC and late night connections at the Harbor Green Line Station. On-time performance for the local feeder lines has improved up to 80% since creation of the Silver Line. Staff regularly evaluates the Silver Line performance to

insure these established connections are maintained. Schedules to be implemented June 28, 2015 will continue existing connections already in place.

- D. Evaluation is based on the demand for the connection by time of day and day of week; and addresses fare pricing implications, resource and other requirements, ridership impacts, and implementation schedule.

Scheduled connections to and from the Silver Line are currently in place. Due to the frequency of the line, connections are not necessary until the headways widen in the mid-day, evening, and on weekends. There is also a late night Silver Line connection with the Metro Green Line at the Harbor Freeway Station.

Under Metro’s current pricing policy, transfers are free up to two hours after an initial TAP. Since inception, the Silver Line has had a simplified line fare which equals one base fare plus one zone fare, which today remains the same (\$2.50). Today, a Line 246 or 344 patron using a Day Pass to access the Silver Line pays no additional charge. A stored value TAP user would pay a 75 cent upcharge at the H/GTC; however this would not change even if the Silver Line were extended to San Pedro. No matter what services are implemented, there are no negative fare pricing implications because the current fare structure includes a one zone upcharge and free transfers with a stored value TAP card.

Potential Service Alternatives

The travel time just from San Pedro or the Palos Verdes Peninsula to the H/GTC is over one hour. It is not recommended to extend Silver Line trips to these far terminals, which would cause the Silver Line to have one-way trip times of nearly two and a half hours. The local segments today have good on-time performance (up to 80%), which would be negatively affected by the volatility of the freeways. In turn, the Silver Line five minute headway would suffer should delays occur on the South Bay surface streets.

The two lines (246, 344) that travel from central San Pedro and the Palos Verdes Peninsula to H/GTC operate hourly weekday mid-day and weekend service. If service levels were improved during these time periods to a 30 minute frequency, the estimated annual increase in revenue bus hours and cost would be an estimated \$3.56 million per year. As today, local line buses would be scheduled to meet arriving and departing Silver Line buses.

The following proposed additional Revenue Service Hours are shown in the table below:

Improve Weekday Base and Weekend All-Day Service to Every 30"					
				Annual	Annual
Line #	Daily	Saturday	Sunday	Rev. Hrs.	Est. Cost
246	47	18	31	14,720	\$2,060,000

344	35	15	17	10,700	\$1,500,000
Total	103	49	61	32,420	\$3,560,000

Coordinate with South Bay Municipal Operators

Staff contacted relevant stakeholders and found that the Silver Line as operated today meets the needs of the South Bay, and reduces duplication of other operators. In the case of extending the line to Palos Verdes Estates, the line would duplicate a number of Torrance Transit services, as well as compete with LADOT Express Line 448, which operates from Downtown LA on the Harbor Express Lanes to Palos Verdes Estates. Gardena Transit has reduced some service to Downtown LA because of the Silver Line’s frequency and point-to-point service, thereby reducing operating cost.

TITLE VI ENVIRONMENTAL JUSTICE IMPACT

The proposed service adjustments described in this report meet the definition of a major service change as defined in LACMTA’s Administrative Code. A public hearing could be required, and an evaluation of the proposed changes would need to be conducted per the Title VI guidelines.

DETERMINATION OF SAFETY IMPACT

There are no safety issues associated with the items presented in this report.

FINANCIAL IMPACT

The Board consideration of the of the proposed service changes presented in this report to Lines 246 and 344 are not included in the FY16 budget. To include the additional service would require an estimated annual increase in revenue bus hours and the cost would be an estimated \$3.56 million per year

ALTERNATIVES CONSIDERED

Service today is operating with light weekday base and all-day weekend ridership, and only 70 to 80% are destined to the H/GTC. At this time, potential 30 minute service during these time periods is not warranted. The service could remain as scheduled today, with future schedule adjustments implemented should demand materialize.

NEXT STEPS

Should the Board of Directors direct staff to pursue implementing potential service improvements as described in this report, staff will plan to conduct a public hearing and perform the Title VI evaluation.

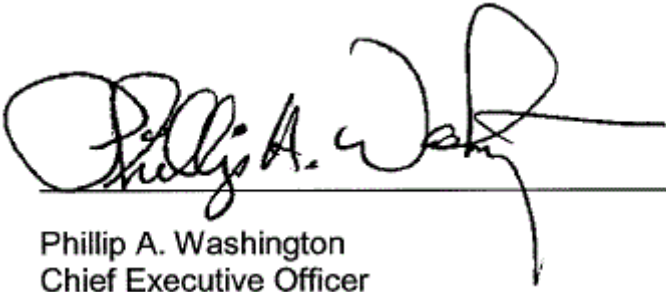
ATTACHMENTS

- Attachment A - February Motion 21, Bus Rapid Transit Service - Silver Line
- Attachment B - Development of the Silver Line

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Chief Executive Officer

Motion by:

**Mayor Eric Garcetti, Director Jacquelyn Dupont-Walker,
Supervisor Don Knabe & Mayor James Butts**

February 19, 2015

Item 21: Bus Rapid Transit Service – Silver Line

The Silver Line was implemented in December 2009 by combining the freeway portions of three Harbor Transit-way express lines operating between San Pedro/Palos Verdes and Downtown Los Angeles) and two El Monte Busway express lines (Operating between Pomona and Downtown Los Angeles).

The freeway segments of the lines were combined into the Silver Line which provides service between Harbor/Gateway Transit Center and El Monte Bus Station via downtown Los Angeles.

The local segments of the lines between San Pedro/Palos Verdes and Harbor/Gateway Transit Center, and Pomona to El Monte Station, operate as separate local lines.

Separating the local and freeway segments was done to improve on time performance on both local and freeway segments, and allow for more flexibility in matching service levels to demand.

However, by separating the segments, passengers who previously had a one seat ride between the local and freeway segments now are required to transfer.

Since inception, Silver Line ridership has more than doubled.

Much of the increase in boardings is along the southern segment between Harbor/Gateway Transit Center and Downtown Los Angeles.

Many of these passengers originate in South Bay communities, including San Pedro and Palos Verdes.

Given the significant increase in South Bay boardings, it is important to reassess the travel time impacts of the transfer between the freeway and local segments at the Harbor/Gateway Transit Center, and the benefits of improving the connection between the South Bay communities and Downtown LA.

WE THEREFORE MOVE that the Board direct the CEO to evaluate options for improving the connection between the Silver Line and service operating into South Bay communities via the Harbor/Gateway Transit Center, including:

- A. Direct routing of Silver Line trips into Palos Verdes and San Pedro
- B. Improved frequencies on local services, including Lines 246 and 344, for better connections with the Silver Line.
- C. Timed transfers and improved on time performance to ensure connections are met.
- D. Evaluation is based on the demand for the connection by time of day and day of week, and address fare pricing implications, resource and other requirements, ridership impacts, and implementation schedule.
- E. Report back with the findings on all the above by the June 2015 Regular Board meeting.

DEVELOPMENT OF THE SILVER LINE

Prior to the Silver Line, four express services operated from the South Bay through the Harbor/Gateway and on to Downtown LA on the Harbor Transitway. These services were poorly utilized, and headways were not coordinated on the Transitway. The 900 space park and ride lot at H/GTC was nearly empty, with only approximately 10% utilization on weekdays. In preparation for the Silver Line implementation in December 2009, staff analyzed the ridership patterns of each individual line. The conclusions were as follows:

- Previous Lines 444, 446 and 447 collectively carried 7,760 boardings per weekday. Of this number, 5,200 (67%) boarded and alighted on the local portion of the route, and 1,400 (18%) boarded between Downtown LA and the H/GTC. Patrons from the South Bay boarding before the H/GTC and riding to Downtown LA accounted for only 1,160 (15%) of the boardings.

In summary, the majority of the boardings and alightings took place along the local portions of the previous lines. Downtown LA was not a major attraction for local South Bay residents, and the low number of patrons parking at the Harbor/Gateway TC was an indication that the previous express services were not working.

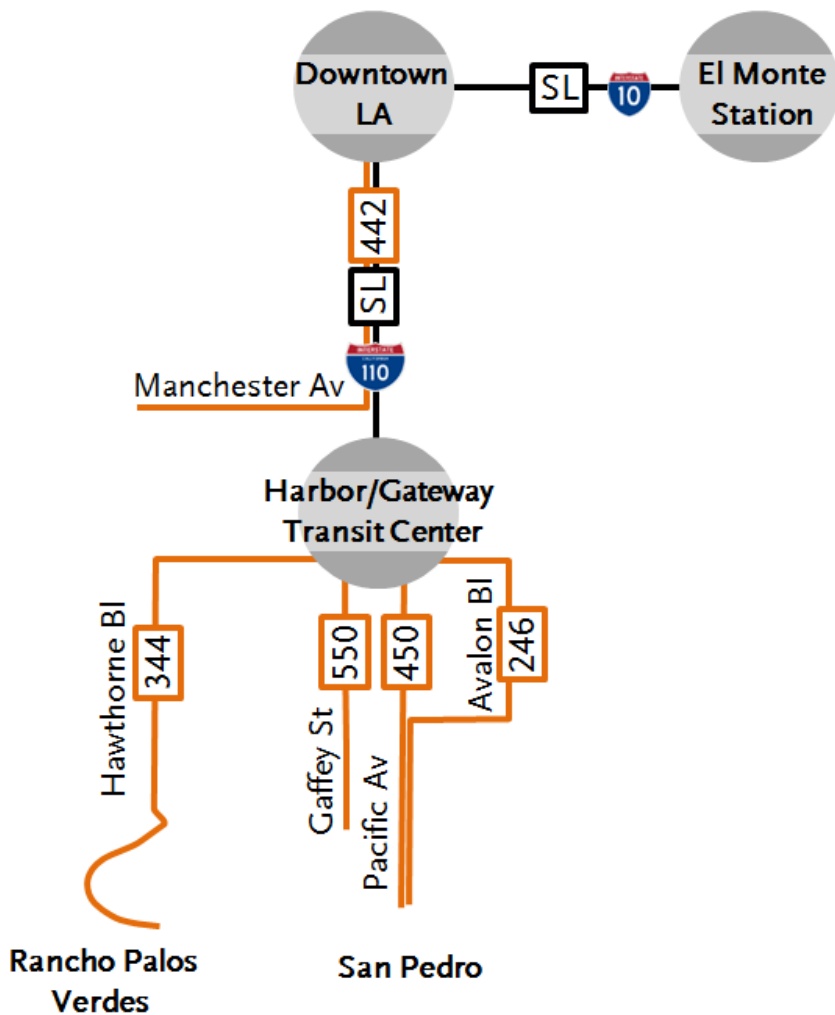
Customer Survey - Based on the data analysis above, Service Planning staff surveyed patrons of the three existing express lines prior to the implementation of the Silver Line with the following results:

- Provide more late night service. *The last Silver Line bus now leaves Downtown LA at 1:22AM.*
- Provide direct connection from South Bay to CSULA. *Silver Line buses are through routed in Downtown, eliminating a transfer to reach the college from the South Bay.*
- Improve on-time performance. *As noted below in Existing Service section, OTP has greatly increased on Lines 246 and 344, benefiting local patrons.*
- Cleaner buses, better A/C, faster speeds. *Express Lanes funding was provided to buy new buses dedicated to the Silver Line (dedicated buses for a line reduces graffiti and stay cleaner). Stops were reduced in Downtown LA to reduce travel time.*
- Lower fares, don't charge to transfer. *In order to reduce the "transfer penalty" of existing patrons and encourage new ones, a unique fare structure was established whereby Day Pass Tap users could ride the Silver Line at no additional charge.*

While this Motion is focused on the Harbor Transitway portion of the Silver Line, data for Lines 484 and 490 which eventually terminated at El Monte Station had similar

statistics. Only 12% of the total combined ridership continued west of El Monte Station to Downtown LA, showing that the core ridership was east of the station.

- The Silver Line has approximately 7,100 boardings at the H/GTC, and local replacement service, Lines 246 (ex-446) and 344 (ex-444) carry 5,100 (similar number prior to the Silver Line implementation). Therefore, combined South Bay ridership has increased by 57%, mostly due to the Silver Line.



The following lines also serve the H/GTC but are not part of this report: Metro Lines 51, 130, 205, 352, Torrance Transit Lines 1, 4 and 6, Carson Circuit, and G-Trans Lines 1, 2 and 4.

EXISTING SOUTHBAY SERVICES CONNECTING TO THE SILVER LINE

Line 246 – This line replaced express Line 446. Operating from the Korean Bell or Pacific Av and 21st in San Pedro to H/GTC, the line serves the communities of Wilmington and Carson. Previously, Line 446 operated in the peak only from the Korean Bell in San Pedro to Union Station. The travel time was up to one hour and thirty minutes from the Korean Bell to Union Station; on-time performance was 59%. Today, on-time performance is 73%.

During the base period, service terminated from San Pedro at the H/GTC. This was due to low demand from San Pedro to Downtown LA in the mid-day. Patrons transferred at the H/GTC to either Lines 444 or 445 and continued to Los Angeles.

Old Line 446 operated every 30 minutes in the peaks and hourly in the base period, seven days a week. Today, Line 246 operates every 20 minutes in the peaks and hourly in the base period.

Line 344 – This line replaced express Line 444. Operating from Palos Verdes, it travels through the areas of Rancho Palos Verdes, Rolling Hills Estates, and Torrance. The travel time when operating to Downtown Los Angeles was as high as one hour and thirty five minutes, with an on-time performance rating of 57%. Today the travel time from Palos Verdes to the H/GTC is approximately 60 minutes, with an on-time performance rating of 80%.

Service on old Line 444 was every 20-30 minutes in the peaks, and hourly in the base period. Today on Line 344, peak service is now every 10-30 minutes and base service remains at every 60 minutes.

Line 450 – Operating since June 2005, Line 450 operates as an express line from San Pedro to Figueroa and 5th St in the peak periods, and shortlines in the base period and on Saturday and Sunday at the H/GTC. Passengers may transfer to the Silver Line to complete their trip to Downtown LA.

Silver Line – The Silver Line from Downtown LA to the H/GTC operates every five minutes in the peak periods and every 15 minute in the base period. Travel time from the H/GTC to Downtown LA is 30 minutes, and to El Monte Station is one hour.

The following lines also the H/GTC but are not part of this report: Metro Lines 51, 130, 205, 352, Torrance Transit Lines 1, 4 and 6, Carson Circuit, and G-Trans Lines 1, 2 and 4.

Silver Line Report

Motion 21

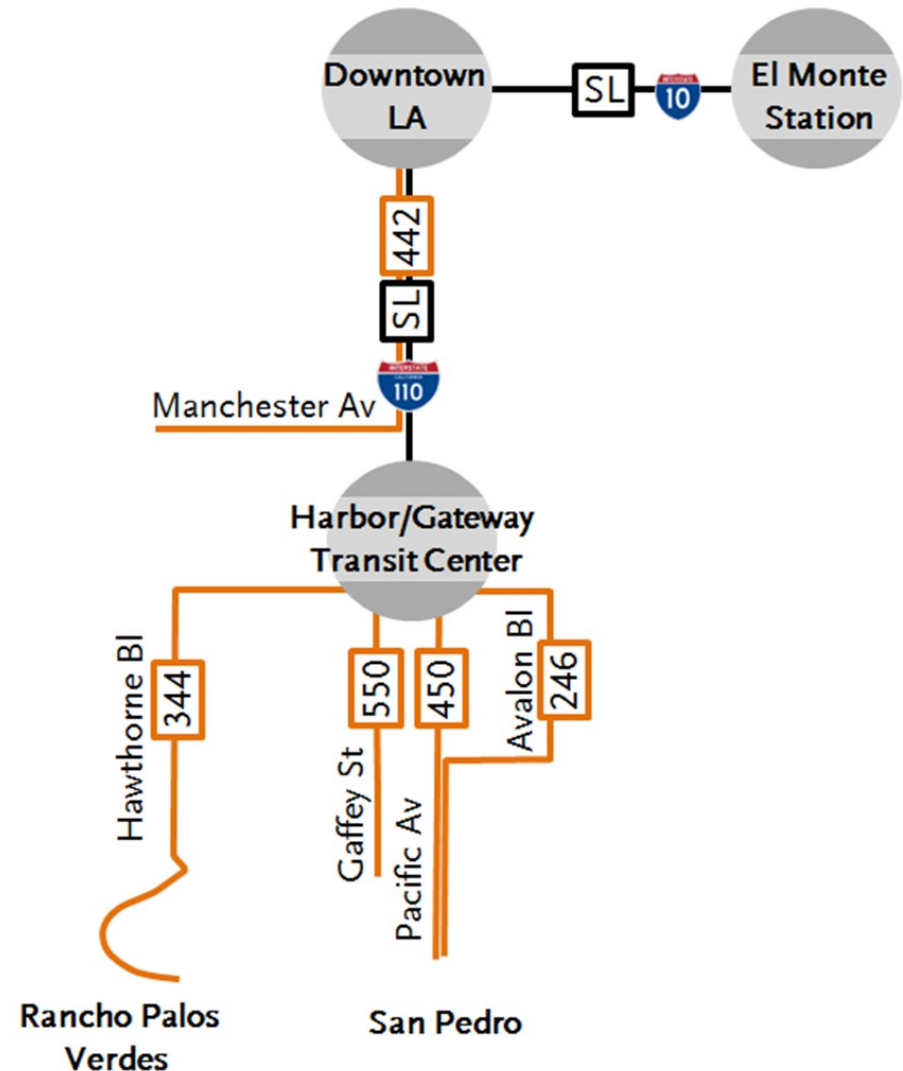
Receive and File



Over View

- Silver Line began December 2009, combining three express lines into one BRT service
- Service is every 5 minutes in the peaks, 15 minute off-peak
- Patronage has increased by 135%
- Boardings at all Harbor Fwy in-line stations has more than doubled
- Connecting services at the Harbor/Gateway

 Transit Center are timed
Metro



Board Directed Items Evaluated

A. Direct route of Silver Line into Palos Verdes and San Pedro

- Metro Express Line 450 currently provides direct weekday peak travel between downtown LA and San Pedro.
 - Mid-day & weekend service operates to Harbor Gateway TC with timed connections to the Silver Line.
- Extending Silver Line service to Palos Verdes (via Line 344) would add 1:20 travel minutes. The resulting 2:20 long Silver Line would experience service reliability and bus bunching problems.
- Operating the Silver Line to San Pedro over the route of Line 246 would add one hour of travel time.
- All lines from San Pedro and Palos Verdes have timed transfers with the Silver Line at Harbor Gateway Transit Center.

B. Improved frequencies on local services Lines 246 and 344 for better connections with the Silver Line

- These lines currently operate every 20 to 30 minutes in the peaks, **and less** frequently during mid-days and weekends.
- During longer headway periods, timed transfers are provided at the Harbor Gateway Transit Center to minimize wait time.
- Only 20 to 30% of riders on these local lines ride to the Harbor Gateway TC.
- Current ridership levels does not warrant additional service.
- Any increase in service levels would require additional resources.

C. Timed Transfers and improved on-time performance to ensure connections are met

- Since inception of the Silver Line, local feeder lines have improved OTP up to 80%.
- Scheduling has created scheduled connections between local Silver Line buses.

- D. Evaluation is based on demand for the connection by time of day and day of week; address fare pricing implications, resources and other requirements, ridership impacts, and implementation schedule.
- Time connections are provide during longer headway periods at the Harbor Gateway Transit Center to minimize wait time.
 - Fares are the same regardless if the Silver Line is extended or passengers transfer at HG/TC (Silver Line = \$2.50, or Local = \$1.75 plus 75 cent zone).
 - Current ridership demand does not warrant additional service.
 - Any increase in service levels would require additional resources.

Potential Service Alternatives:

Improve Weekday Base and Weekend All-Day Service to Every 30"					
				Annual	Annual
Line #	Daily Rev. Hrs.	Saturday Rev. Hrs.	Sunday Rev. Hrs.	Rev. Hrs.	Est. Cost
246	47	18	31	14,720	\$2,060,000
344	35	15	17	10,700	\$1,500,000
Total	103	49	61	32,420	\$3,560,000