Los Angeles County
Metropolitan Transportation
Authority
One Gateway Plaza
3rd Floor Board Room
Los Angeles, CA

Metro

Board Report

File #: 2019-0429, **File Type:** Informational Report **Agenda Number:** 5.

PLANNING AND PROGRAMMING COMMITTEE
JULY 17, 2019

SUBJECT: METROLINK ANTELOPE VALLEY LINE STUDY

ACTION: RECEIVE AND FILE

RECOMMENDATION

RECEIVE AND FILE status report on Motion 47 from the July 2017 Board of Director's meeting regarding the Metrolink Antelope Valley Line study (Refer to Attachment A).

ISSUE

Motion 47 authorized a study of the Metrolink Antelope Valley Line (AVL) between Burbank and Lancaster and directed staff to coordinate with Metrolink and the North County Transportation Coalition to:

a) Determine a range of frequency of service to maximize regional accessibility throughout the day;

b) Assess the condition of the existing rail infrastructure (e.g. tracks, culverts, tunnels, crossings, etc.) that limits operational flexibility and service reliability;

c) Recommend needed infrastructure and capital improvement costs (in level of priority) along with cost benefit analysis to support the range of frequency of service, service reliability, safety, an on-time performance including latest technologies in rail propulsion, controls and rail stock.

In collaboration with Metrolink, the North Los Angeles County Transportation Coalition (NCTC), California State Transportation Agency and LOSSAN, Metro presents the initial results of the Antelope Valley Line Study (Burbank to Lancaster) to incrementally improve rail service along the Antelope Valley Line along with a cost benefit analysis of the corresponding infrastructure and capital improvements.

DISCUSSION

This AVL Study is focused on the 65.2 mile portion of the rail line between the Burbank Downtown Station and the Lancaster Station. A separate study called Los Angeles-Glendale-Burbank study includes the remaining 11.4 mile portion of the route between Los Angeles Union Station to Burbank Downtown Station. In collaboration with NCTC and Metrolink, this AVL study identified six (6) service scenarios that align with the California State Rail 2040 Plan and Metrolink's Southern California

Optimized Rail Expansion Plan (SCORE), which advance more regular service frequencies in the corridor, along with a set of cost-effective infrastructure improvements needed to support each scenario. Furthermore, this study also developed a phased implementation plan and identified potential funding strategies to enhance regional mobility. The intent of the Antelope Valley Line Study is to define the initial steps, in terms of capital investment and improved rail service, that will set this corridor on a trajectory to achieve the State's and region's ambitious goals for rail transportation for the next twenty years.

Background

The Antelope Valley Line (AVL) is a 76.6 mile class 4 rail corridor route owned by Los Angeles County Metropolitan Transportation Authority (Metro) and used by the Southern California Regional Rail Authority (SCRRA) running Metrolink commuter rail service between Los Angeles Union Station and Lancaster as well as Union Pacific Railroad for class 1 freight service. There are up to 30 Metrolink commuter trains and 12 Union Pacific Railroad freight trains per day on the AVL line. The AVL has a variety of service challenges with largely 60% single track along with aging infrastructure, significant grades and curves through mountainous topography.

The average passenger rail travel time between Lancaster and Los Angeles Union Station with 11 station stops is approximately two (2) hours and 15 minutes. To shorten the commute to 1 hour and 40 minutes, Metrolink operates two weekday roundtrip express service from Los Angeles Union Station to Palmdale with service stops to select stations of Burbank Downtown, Sylmar/San Fernando, Santa Clarita and Palmdale. The Antelope Valley Transit Authority runs five (5) round trips with bus service between Santa Clarita and Lancaster. The AVL is currently Metrolink's third-busiest line with approximately 7,000 weekday passengers which is equivalent to removing more than 1 million car trips annually.

Service Scenarios

The AVL Study proposed six (6) service scenarios, each with a corresponding set of infrastructure improvements, which are based on a phased implementation. The different phases provide for flexibility based on demand for rail service.

1. **Service Scenario 1** - Provide additional one (1) late evening train
2. **Service Scenario 2** - Provide additional two (2) late evening trains and provide bi-directional hourly mid-day service
3. **Service Scenario 3** - Provide bi-directional 30 minute service during the regular weekday between Los Angeles Union Station and Santa Clarita.
4. **Service Scenario 4** - It is the same as Scenario 3 with additional express service.
5. **Service Scenario 5** - It is the same as Scenario 4 service during the regular weekday, additional express service and intermediate turns at Santa Clarita.
6. **Service Scenario 6** - It is the same as Scenario 4 with intermediate turns at Sylmar/San Fernando Station.

The service plans for the six (6) service scenarios were analyzed to determine where additional railroad capacity would be needed to enable trains running in opposite directions to pass each other, and where yard storage would need to be increased to accommodate a larger rolling stock fleet serving the AVL. Collectively, the six (6) service scenarios will require the 14 infrastructure

improvements shown in Table 1 below. The capital cost for each of these projects is categorized by project and description to support each service scenario. Each scenario requires a subset of these projects, most of which extend or add a second track in portions of the line that currently have only a single track.

Table 1: Infrastructure Improvement Capital Costs by Service Scenario

Project	Description	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6	Estimated Rough Order-of-Magnitude Capital Cost[1]
Lancaster Terminal - 6 train sets	**New double track and second station platform, plus two new 1,000-foot storage tracks (4-train sets stored on tracks) OPTION: Conversion to Service Tracks**			X			X	**$ 27.3M Option: $9M**
Lancaster Terminal - 8 train sets	**New double track and second station platform, plus three new 1,000-foot storage tracks (5-train sets stored on tracks) OPTION: Conversion to Service Tracks**				X	X		**$ 30.1M Option: $12M**
Palmdale North	**New double track and 2 platform tracks at station (integrated with HSR)**					X	X	**$ 127.3M**
Acton Siding	**New 13,200-foot siding**				X			**$ 40.2M**
Ravenna South	**Extend existing siding by 13,200 feet (new double track)**					X	X	**$ 56.3M**
Via Princessa-Honby	**Extend existing siding by 5,808 feet (new double track)**				X			**$ 26.4M**
Canyon-Santa Clarita	**Extend double track by 8,448 feet**			X	X	X	X	**$ 48.8M**
Hood-Saugus	**Connect sidings at each end and convert to double track**				X			**$ 41.6M**
Balboa-Tunnel	**Extend double track by 6.336 feet**		X	X	X	X	X	**$ 41.8M**
Sylmar-Roxford	**New 8,976-foot double track**				X			**$ 42.7M**
Sylmar Station	**Second track at station (other costs included in Van Nuys - Sylmar)**						X	**$ 22.9M**
Van Nuys Blvd-Sylmar	**New 12,672-foot double track**							**$ 47.4M**
Sheldon-Van Nuys Blvd	**New 13,200-foot double track**					X	X	**$ 67.0M**
Brighton-McGinley	**Connect double track segments at both ends**			X	X	X	X	**$ 57.3M**

TOTAL TOTAL	**$0**	**$41.8**	**$175.2**	**$328.9**	**$428.6**	**$448.7**	**$ 677.1M**
WITH OPTIONS			**$184.2**	**$340.9**	**$440.6**	**$458**	**$ 698.1M**

NOTE: ESTIMATED CAPITAL COSTS INCLUDE THIRD PARTY AND SOFT COSTS.

Cost Benefit Analysis

The AVL Study employed rail service modeling and operations analysis that led to the identification of required capital improvements for each service scenario considering five (5) criteria: operations, regional connectivity, costs and financial performance, right-of-way impacts and applied technology.

The evaluation process was designed to assess each individual capital improvement on five (5) factors related to their contribution to improving AVL corridor service: (1) degree to which capital improvement supports sequential service scenario; (2) total capital cost; (3) independent utility of the project; (4) environmental or community impact issues; and (5) required right-of-way acquisitions, on a scale of 10 points to 50 points. The first criterion favors projects that preserve future flexibility to increase service according to a variety of possible service scenarios. Given limited available funding and widespread needs for new infrastructure investments across the entire rail network, proposed improvements with relatively low capital costs will be easier to fund and implement quickly. The independent utility criterion assesses the ability of a project to directly support improved rail service and deliver ridership benefits. The impact and right-of-way criteria measure the degree of risk associated with a project, favoring early action projects that minimize these risks.

The resulting cost to benefit evaluation scores are presented in Table 2 listed on the following page. The top scoring project is the Balboa double-track extension, which is required by Service Scenarios 2 through 6. The regular, repeating hourly service pattern on the AVL that this project enables is expected to be the backbone of any long-term future service plan on the AVL. As a result, this project is robust and logical for the first round of capital improvement investment.

The three proposed additional infrastructure improvements that comprise the second round of capital improvement investment also score high in the evaluation, because they support multiple future service scenarios, are relatively straightforward in terms of construction and are not expected to have significant negative impacts. The four combined infrastructure improvements facilitate Service Scenarios 2 and 3.

Table 2: Evaluation and Ranking of Infrastructure Improvements

Project Name	Description	Estimated Rough Order Magnitude Capital	Total Weighted Score
Lancaster Terminal -- 6 train sets	New double track and second station platform, plus two new 1,000-foot storage tracks (4-train sets stored on tracks) Option to convert storage tracks to service and inspection tracks.	$ 27,300,000 Op	37
Lancaster Terminal -- 8 train sets	New double track and second station platform, plus three new 1,000-foot storage tracks (5-train sets stored on tracks) Option to convert storage tracks to service and inspection tracks.	$ 30,100,000 Op	33
Palmdale North	New double track and 2 platform tracks at station (integrated with HSR)	$ 127,300,000	16

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Acton Siding	New 13,200-foot siding	$ 40,200,000	24
Ravenna South	Extend existing siding by 13,200 feet (new double track)	$ 56,300,000	23
Via Princessa-Honby	Extend existing siding by 5,808 feet (new double track)	$ 26,400,000	25
Canyon-Sta. Clarita	Extend double track by 8,448 feet	$ 48,800,000	40
Hood-Saugus	Connect sidings at each end and convert to double track	$ 41,600,000	24
Balboa-Tunnel	Extend double track by 6.336 feet	$ 41,800,000	49
Sylmar-Roxford	New 8,976-foot double track	$ 42,700,000	23
Sylmar Station	Second track at station (other costs included in Van Nuys - Sylmar)	$ 22,900,000	29
Van Nuys Blvd-Sylmar	New 12,672-foot double track	$ 47,400,000	21
Sheldon-Van Nuys Blvd	New 13,200-foot double track	$ 67,000,000	24
Brighton-McGinley	Connect double track segments at both ends	$ 57,300,000	43
Total ROM Capital Cost		$ 677,1	

NOTE: ESTIMATED CAPITAL COSTS INCLUDE THIRD PARTY AND SOFT COSTS.

Phased Implementation

Based on the evaluation findings and sensitivity analysis along with input from NCTC and Metrolink, it

became clear that improvements to service on the AVL (and the proposed infrastructure improvements needed to support the service scenarios) should be viewed as an incremental service improvement continuum as funding permits, rather than any one scenario being an end-all objective.

The study determined three (3) successive phases potentially at intervals (5 year, 10 year and 20 year) that are consistent with the California State Rail Plan and Metrolink's SCORE Plan. Each of the three phases identified proposed infrastructure improvements at build out conditions that allow Regional Rail operators to further analyze and determine the order of new services within a given phase. The AVL Study (Burbank to Lancaster) also took into consideration potential future growth passenger rail services and freight services by Union Pacific Railroad. The three phases of service improvement include:

Phase 1 (5 year Plan) - This five year plan considers increase in rail services within the existing rail infrastructure and operations and maintenance costs.

a) Add late-night train departure from Los Angeles Union Station at 11 p.m. on Fridays and Saturdays.

b) Potentially adjust off-peak schedules to improve service frequency and reduce schedule gaps.

c) No capital investments are needed for this phase.

Phase 2 (10 year Plan) - The next ten years consider increase in rail services with defined set of infrastructure improvements needed to support the service.

a) Adds two mid-day service round trips to provide hourly frequency between Los Angeles Union Station and Santa Clarita Valley.

b) Hourly frequency between Los Angeles Union Station and Antelope Valley supported by Antelope Valley Transit Authority bus service. Where the Antelope Valley Transit Authority could reduce the current five round trips of bus service between Santa Clarita and Lancaster to three round trips.

c) Allows for expanding late night service to remaining weekdays and adds a second frequency on selected days, based on ridership demand.

d) Requires a capital investment of $42 million for the Balboa Double Track Extension from Balboa Boulevard to Sierra Highway. Located in the unincorporated Los Angeles County, this project will extend double track to just south of Tunnel 25.

Phase 3 (20 year Plan) - The twenty (20) year plan considers more robust increase in rail service that also includes integration with Metro's San Fernando Light Rail and Sepulveda Corridor.

a) Doubles volume of daily trains compared with existing service (30 daily round trips).

b) Marginally increases peak service frequency and adds morning express train to Los Angeles Union Station.

c) Provides more regular reverse-commute service.

d) Further increase to mid-day service frequency - 30 minutes between Los Angeles Union

Station and Santa Clarita Valley; hourly between Los Angeles Union Station and Antelope Valley.

e) Bus service round trips would double from existing conditions to provide 30 minute between Santa Clarita and Lancaster.

f) Provides more frequent and regular service on weekends and holidays.

g) Requires a capital investment of $133.4 million for three additional capital improvements. (1) Lancaster Terminal Improvements ($27.3 million) shall construct new double track to the end of the corridor, a second station platform and two storage tracks. (2) Canyon to Santa Clarita Double Track Extension ($48.8 million) from Soledad Canyon Road to Golden Oak Road is located within the City of Santa Clarita. (3) Brighton to McGinley Double Track ($57.3 million) is a segment of the Brighton to Roxford double track project that connects completes a gap in double track between Burbank and Sun Valley.

It should be noted, the time frame of the three phases of investments (5, 10 and 20 years) can be accelerated based on funding availability.

Findings

Service scenarios 1, 2 and 3 offer the potential for tangible improvements in AVL service, are all consistent with multiple future 2040 year plans, and are recommended for implementation **if funding has been identified**. The proposed infrastructure improvements identified in this study to support service scenarios 1, 2 and 3 are listed below and estimated at approximately $175.2 million. At a minimum, the Balboa Double Track Extension is required to support service scenario 2 with hourly bi-directional service on the AVL at an approximate cost of $41.8 million.

1. Balboa Double Track Extension - $41.8 million
2. Brighton to McGinley Double Track- $57.3 million
3. Canyon to Santa Clarita Double Track - $48.8 million
4. Lancaster Terminal Improvements - $27.3 million

Staff is working with NCTC and Metrolink to finalize the report by the end of July. It is important to note, the costs shown above only cover the preliminary estimated capital improvements required and does not include annual maintenance costs. Further analysis by each passenger or freight rail operator will be required to implement new service(s).

FINANCIAL IMPACT

This is a Receive and File report for information only with no financial impacts. Implementation of any of the scenarios would require funding to be identified for capital and operations costs.

Impact to Budget

This report has no financial impact.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

Recommendation supports strategic plan goals of the Metro Vision 2028 Strategic Plan:

Goal 1: Provide high-quality mobility options that enable people to spend less time traveling. The incremental service options improve LA County's overall transit network and assets.

Goal 4: Transform LA County through regional collaboration and national leadership. Goal was achieved by partnering with Metrolink, North County Transportation Coalition and the local jurisdictions to identify needed improvements to improve mobility.

NEXT STEPS

Staff will return to the Board on a project by project basis to seek approval to continue to advance any projects or service identified through this study if funding has been identified.

ATTACHMENTS

Attachment A - July 2017 Metro Board Motion 47
Attachment B - Antelope Valley Line Study Presentation

Prepared by: Brian Balderrama, Senior Director, Regional Rail, (213) 418-3177
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Reviewed by: Richard Clarke, Chief Program Management Officer, (213) 922-7557

Phillip A. Washington
Chief Executive Officer

..Meeting_Body

REVISED
PLANNING AND PROGRAMMING COMMITTEE
JULY 19, 2017

..Preamble

Motion by:

DIRECTORS BARGER & NAJARIAN

Study of Metrolink Antelope Valley Line

The Antelope Valley Line (AVL) plays a critical role in connecting North Los Angeles County, Union Station and cities in between, carrying the third highest ridership in Metrolink's commuter rail system, reducing the equivalent of one lane of traffic from major freeways during peak commute hours, and removing approximately 1,000,000 weekday automobile trips per year. ~~the highest percentage of transit dependent riders.~~

Currently, due to numerous constraints, a trip from the Antelope Valley to Union Station can take over two hours, with speeds averaging just 35 miles per hour from end-to-end. There are also gaps in service throughout the day which ~~may~~ further discourages ridership.

Through previous board actions, progress has been made to address some of the AVL service issues such as the Metrolink *Antelope Valley Line Infrastructure Improvement Strategic Plan* dated March 2012, the *North County Multimodal Integrated Transportation Study* (NCMITS) dated 2013, and the new *Los Angeles-Burbank-Glendale Corridor Feasibility Study*; but ~~to date,~~ a comprehensive study has yet to take place to analyze constraints on the northern segment of the AVL.

~~As Metro embarks on updating its Long Range Transportation Plan,~~ To be compatible with future planning efforts and to best prepare for ~~as~~ new funding sources that will become available to the North County Subregion in the coming years, it is important that stakeholder agencies understand the most cost-effective solutions to break down the constraints that continue to hold back the AVL from maximizing its service potential.

..Subject
SUBJECT: MOTION BY DIRECTORS BARGER AND NAJARIAN

..Heading
RECOMMENDATION

..Title
WE THEREFORE MOVE that the Metro Board:

AUTHORIZE a study of the Metrolink Antelope Valley Line (AVL) between Burbank and Lancaster that determines a range of frequency of service to maximize regional accessibility throughout the day; assesses the status of existing tracks, culverts, tunnels, crossings and other infrastructure which limits operational flexibility & service reliability; recommends needed infrastructure & capital improvements (in level of priority) to support the range of frequency of service, service reliability, safety, and on-time performance, including latest technologies in rail propulsion, controls and rail stock; estimates the costs associated with the aforementioned improvements; and provides a cost-benefit analysis with prioritization of said improvements that ~~can~~ could be used to help guide ~~both~~ Metro, ~~and~~ Metrolink ~~agencies~~ and the North County Subregion in a direction to best achieve the above stated goals, while ensuring compatibility with future planning processes;

DIRECT staff to coordinate with Metrolink and local North County stakeholders on this study and to incorporate any previous or ongoing efforts such as the *Antelope Valley Infrastructure Improvements Strategic Plan*, the *NCMITS,* the *Los Angeles-Burbank-Glendale Corridor Feasibility Study* and Metrolink efforts to address state of good repair, so as to avoid being duplicative;

ACKNOWLEDGE that execution of this study shall not hinder any efforts currently underway by Metro or Metrolink to deliver capital improvements or address state of good repair on the AVL; and

DIRECT the CEO to report back to the board in September with an update on stakeholder outreach, identification of potential funding sources for the study, along with a timeline for study implementation.

Metrolink Antelope Valley Line

Metro Board Motion 47 authorized a study of the Metrolink Antelope Valley Line (AVL) between Burbank and Lancaster and directed staff to coordinate with Metrolink and the North County Transportation Coalition to:

a) Determine a range of frequency of service to maximize regional accessibility throughout the day;

b) Assess the condition of the existing rail infrastructure (e.g. tracks, culverts, tunnels, crossings, etc.) that limits operational flexibility and service reliability;

c) Recommend needed infrastructure and capital improvement costs (in level of priority) along with cost benefit analysis to support the range of frequency of service, service reliability, safety, an on-time performance including latest technologies in rail propulsion, controls and rail stock.

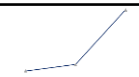
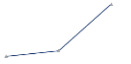
Metro Planning and Programming Committee Meeting
July 17, 2019

AVL Study Context

1. Strong Ridership and Mode Share Growth

a) Daily AVL trips could increase from 6,500 in FY19 to 15,000 by FY30

b) Projected 9% growth per annum through 2042

Station	FY15	FY19	2042	Growth Trends
GLENDALE	609	718	1,568	
BURBANK	832	925	1,689	
BURBANK AIRPORT-NORTH	—	79	727	
SUN VALLEY	76	102	899	
SYLMAR / SAN FERNANDO	462	642	4,598	
NEWHALL	295	394	1,942	
SANTA CLARITA	263	401	1,566	
VIA PRINCESSA / VISTA CANYON	421	546	944	
ACTON / VINCENT GRADE	95	130	425	
PALMDALE	342	499	8,241	
LANCASTER	349	475	4,295	
TOTAL	3,744	4,911	39,025	

Existing AVL Stopping Patterns

Existing net cost to operate and maintain the Antelope Valley Line is $34.5 million with 15 daily round trips using 6 train sets and AVTA bus support.

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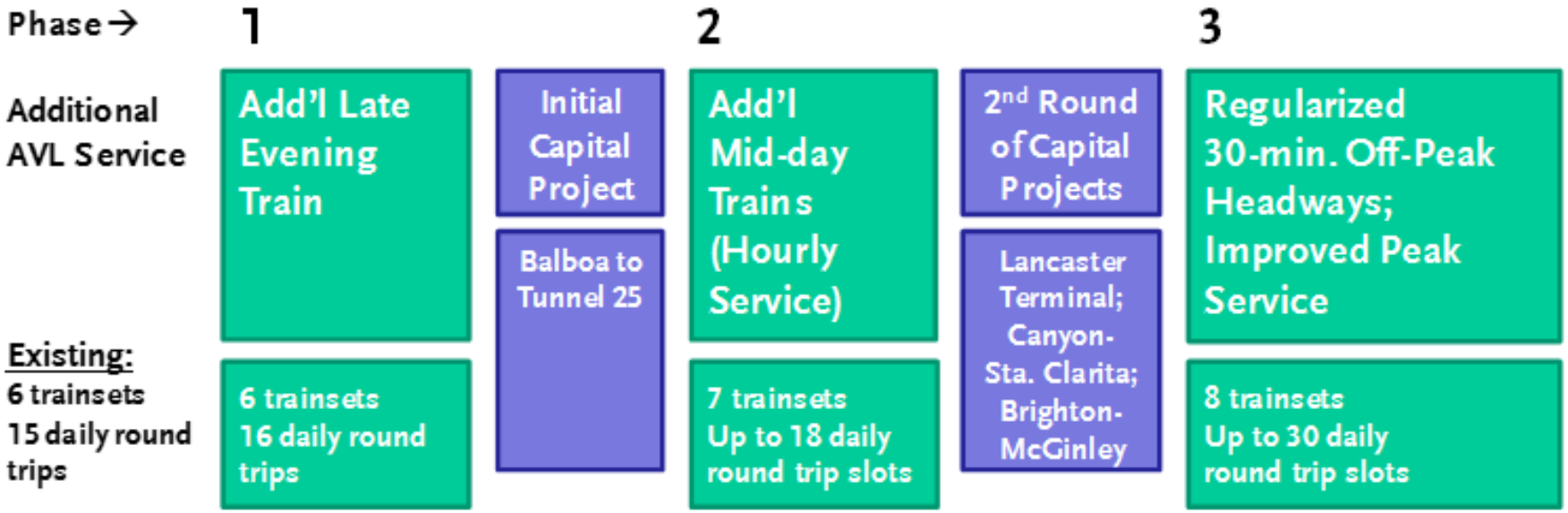
Service Scenario Plan

1. **Study identified a phased incremental plan for improving AVL service, if funding is identified.**

   a) Planning years provided are build out conditions due to multiple service options and capital project scheduling.

   b) New/Available round trips can be filled by current operators (Metrolink or Union Pacific Railroad) or future potential operators (Amtrak –Pacific Surfliner, California High Speed Rail Authority or Virgin Trains USA)



Service Scenario Plan

Five Year Plan

Scenario 1: 1 additional late evening train

Ten Year Plan

Scenario 2: 2 additional off-peak round trips to provide hourly mid-day service

Twenty Year Plan

Scenario 3: Improved peak service and semi-hourly off-peak service

Future Year Plan Options

Scenario 4: Semi-hourly service plus express service

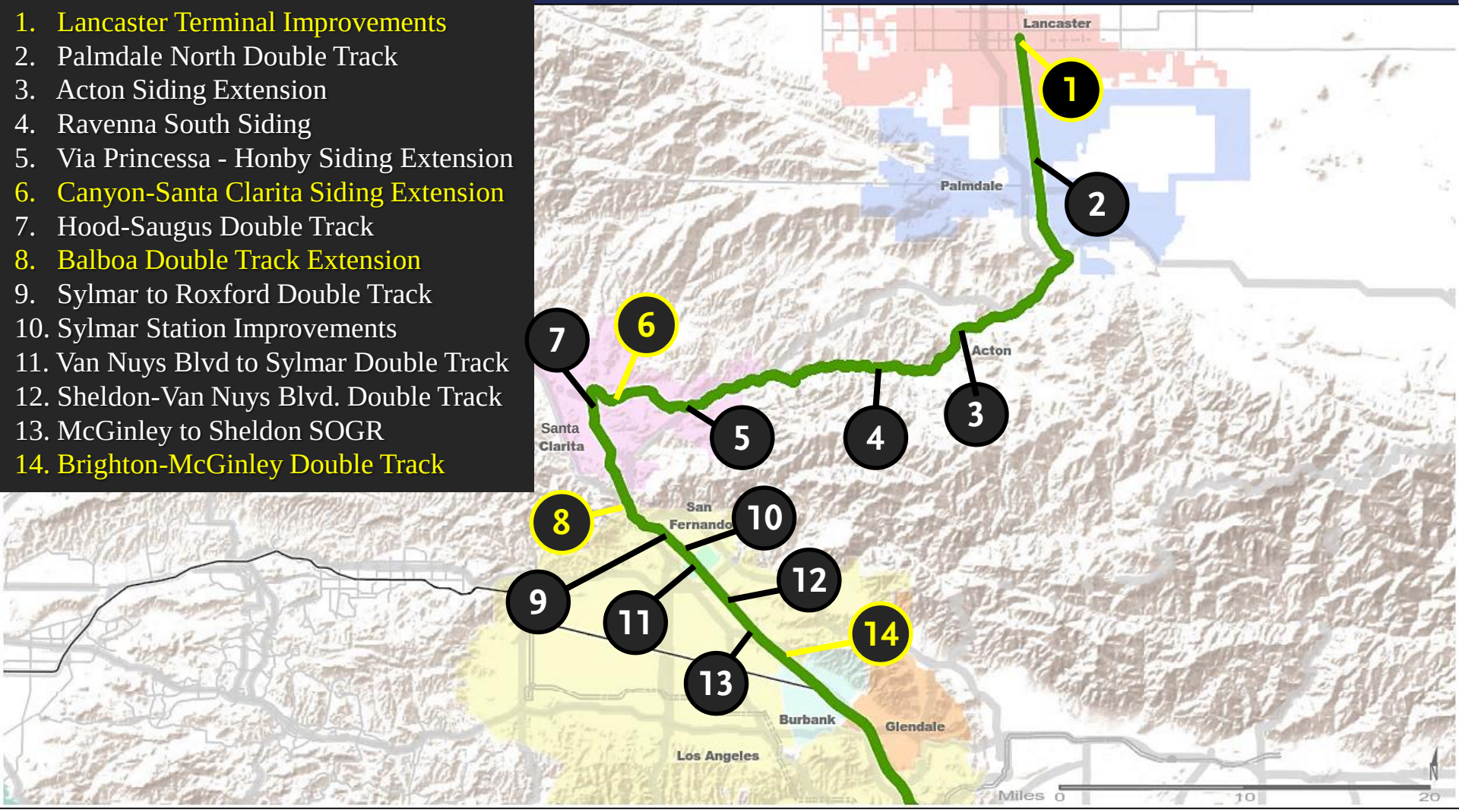
Scenario 5: Same as (4), with intermediate turns at Santa Clarita

Scenario 6: Same as (4), with intermediate turns at Sylmar/San Fernando

1. **Collectively, the 6 service scenarios will require 14 capital projects.**
2. **Antelope Valley Line Stakeholders advised the team to move forward with service scenarios 1, 2 and 3**

Scenario Infrastructure Project Overview

1. Lancaster Terminal Improvements
2. Palmdale North Double Track
3. Acton Siding Extension
4. Ravenna South Siding
5. Via Princessa - Honby Siding Extension
6. Canyon-Santa Clarita Siding Extension
7. Hood-Saugus Double Track
8. Balboa Double Track Extension
9. Sylmar to Roxford Double Track
10. Sylmar Station Improvements
11. Van Nuys Blvd to Sylmar Double Track
12. Sheldon-Van Nuys Blvd. Double Track
13. McGinley to Sheldon SOGR
14. Brighton-McGinley Double Track



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Scenarios 1, 2 and 3 require 4 of 14 capital projects highlighted above.

Capital Project Investments for Scenarios 1, 2 & 3

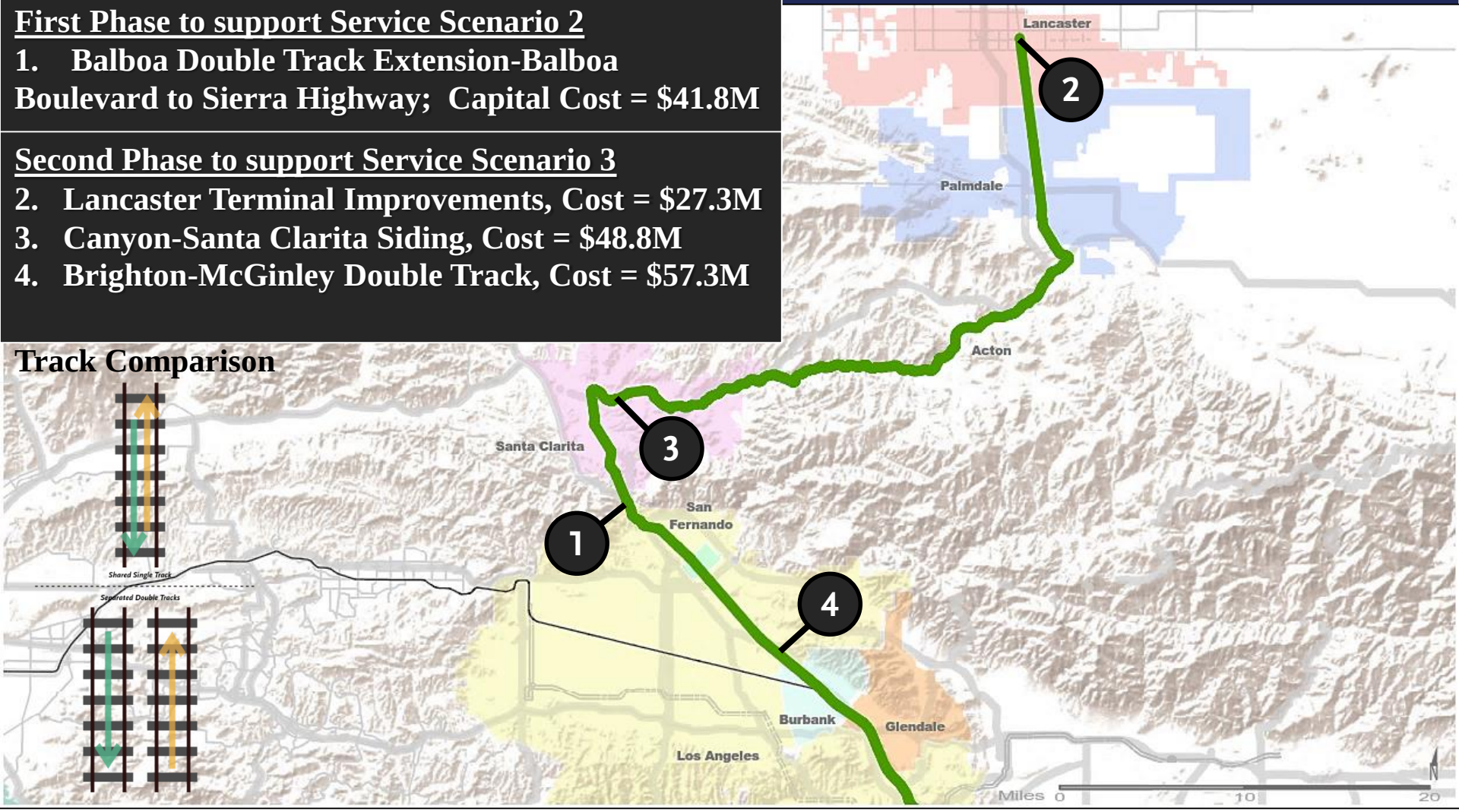
First Phase to support Service Scenario 2

1. **Balboa Double Track Extension-Balboa Boulevard to Sierra Highway; Capital Cost = $41.8M**

Second Phase to support Service Scenario 3

2. **Lancaster Terminal Improvements, Cost = $27.3M**
3. **Canyon-Santa Clarita Siding, Cost = $48.8M**
4. **Brighton-McGinley Double Track, Cost = $57.3M**

Track Comparison



First phase capital investment allows for hourly mid-day service and existing peak service

Second phase capital investment allows for 30 minute bi-directional service to Santa Clarita and hourly service from Santa Clarita to Lancaster.

Funding Opportunities

1. Local funding has not yet been identified for the capital infrastructure required to achieve the twenty year plan, Total Cost: $175.2 M
   a) Phase I, First Ten Years: $41.8 M, Team to work with State and Local Partners to identify funding.

   b) Phase II, Second Ten Years: $133.4M, Team to work with Local, State and Federal Partners to identify funding.

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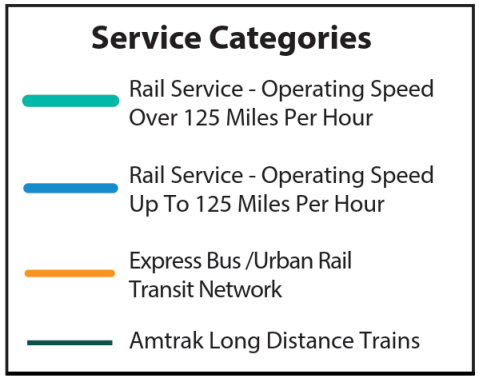
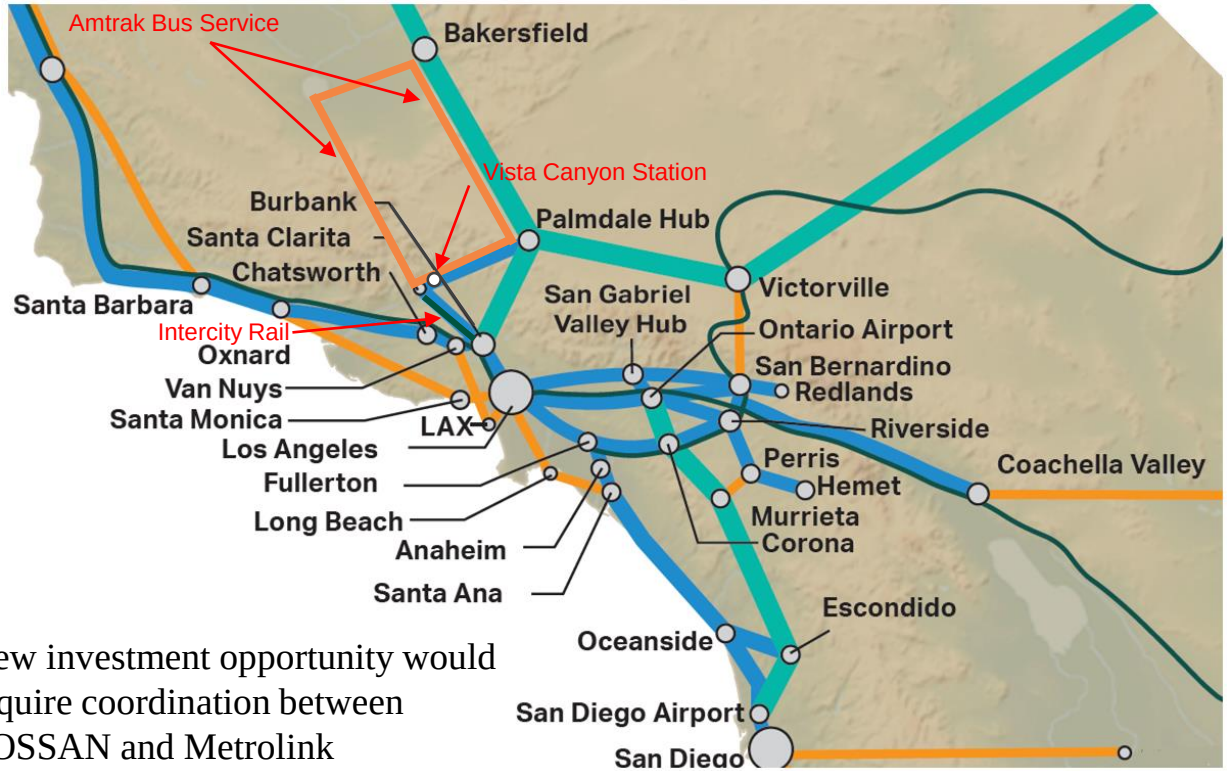
Future Passenger Service with multiple Operators

A. Potential New Operator Along the Corridor

1. The State is considering an extension of intercity passenger rail service to Santa Clarita to connect with the Pacific Surfliner service in Los Angeles. This could present an opportunity for through service between Santa Clarita and San Diego with Amtrak bus service to shorten the commute to Bakersfield from the current 3 hours to about 90 minutes(LAUS to Bakersfield).

*This exhibit modified the 2018 State Rail Plan





New investment opportunity would require coordination between LOSSAN and Metrolink

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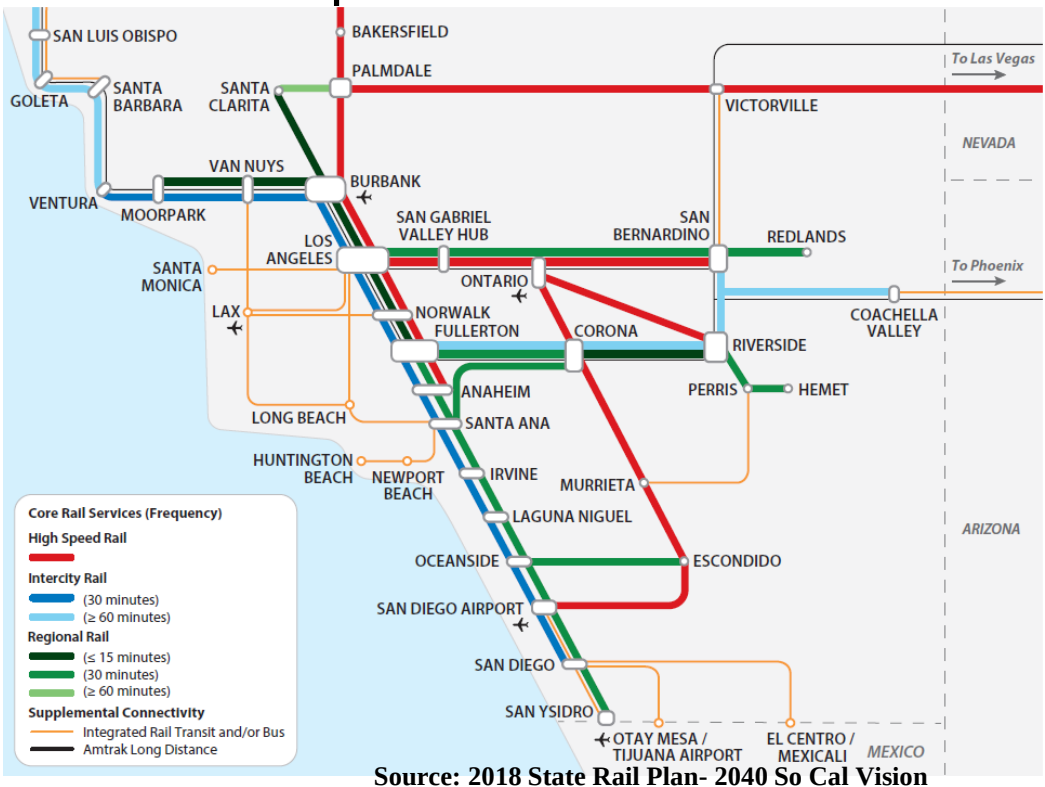
Future Passenger Service with multiple Operators

HSR Blended Service/ Blended Operations:

1. Current Limitations on HSR between Palmdale and Los Angeles
   a) Original HSR Plan for dedicated alignment extremely costly; funding unlikely
   b) Blended service on the AVL route offers potential benefits for CHSRA, Virgin Trains USA, Amtrak and Metrolink rail services
2. Further analysis required for additional capital investment
   a) Identify line electrification constraints for CHSRA such as vertical clearance and curve straightening projects.
   b) Identify and evaluate additional capacity projects to support blended service



Source: 2018 State Rail Plan- 2040 So Cal Vision

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Future Passenger Service with multiple Operators

1. Rail Multiple Unit Technology – Rail Multiple Units
   a) Diesel Multiple Unit (DMU) – One Power Car required for four cab cars
   b) Electric Multiple Unit (EMU, similar to HSR) – 1:3 ratio for powering
   c) Metrolink is developing a Fleet Modernization Plan (Fall 2020) to plan for a zero emissions future.

2. Travel Time Improvement
   a) 100 mph maximum capability for both
      (79 mph CA max speed)
   b) Tilting train capability for both DMU and EMU

Source: Redlands Passenger Rail Project (SBCTA)

3. Compatibility with Future High Speed Rail

   Continue to evaluate the extent to which the EMU service supports future development of HSR in the corridor

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Thank You!

Metrolink Antelope Valley Line

On July 19, 2017, Directors Barger and Najarian issued a motion for the study of the Metrolink Antelope Valley Line to:

a) Determine a range of frequency of service to maximize regional accessibility throughout the day;

b) Assess the condition of the existing rail infrastructure (e.g. tracks, culverts, tunnels, crossings, etc.) that limits operational flexibility and service reliability;

c) Recommend needed infrastructure and capital improvement costs (in level of priority) along with cost benefit analysis to support the range of frequency of service, service reliability, safety, an on-time performance including latest technologies in rail propulsion, controls and rail stock.

Metro Planning and Programming Committee Meeting
July 17, 2019

Antelope Valley Line Study Context

1. Strong Ridership Growth with Fare Discount Program

a) In April 2015, the Board approved a motion to reduce fares 25% on the Metrolink Antelope Valley Line. Since that program's launch in July 2015, the AVL Fare Discount Pilot Program has been successful in growing ridership, **an increase of 29% as of June 2019**.

b) In July 2018, Metro stopped subsidizing the Fare Discount Program and spent about $2 Million, **well under the $5.46 Million programmed**.

% Change since 25% FARE REDUCTION PROGRAM (Started 7/1/2015)						
15 vs 16	16 vs 17	17 vs 18	18 vs. 19	15 vs 17	15 vs 18	15 vs. 19
4.4%	2.7%	8.7%	7.4%	7.2%	16.5%	25.1%
6.7%	5.2%	4.9%	7.8%	12.2%	17.7%	26.8%
9.3%	8.9%	2.9%	6.5%	19.0%	22.5%	30.5%
17.5%	3.7%	3.8%	6.5%	21.9%	26.6%	34.9%
13.9%	4.5%	4.3%	1.6%	19.0%	24.2%	26.2%
14.8%	4.3%	4.6%	3.6%	19.8%	25.3%	29.8%
17.6%	9.0%	5.9%	1.5%	28.2%	35.7%	37.7%
20.0%	2.7%	3.1%	-1.3%	23.3%	27.1%	25.5%
13.4%	7.7%	1.5%	0.1%	22.1%	23.9%	24.1%
11.3%	7.9%	4.2%	2.4%	20.1%	25.1%	28.2%
12.6%	3.6%	8.0%	3.4%	16.7%	26.0%	30.3%
13.3%	4.4%	9.0%	-0.4%	18.3%	29.0%	28.4%
12.8%	**5.4%**	**5.0%**	**3.3%**	**18.9%**	**24.8%**	**28.9%**

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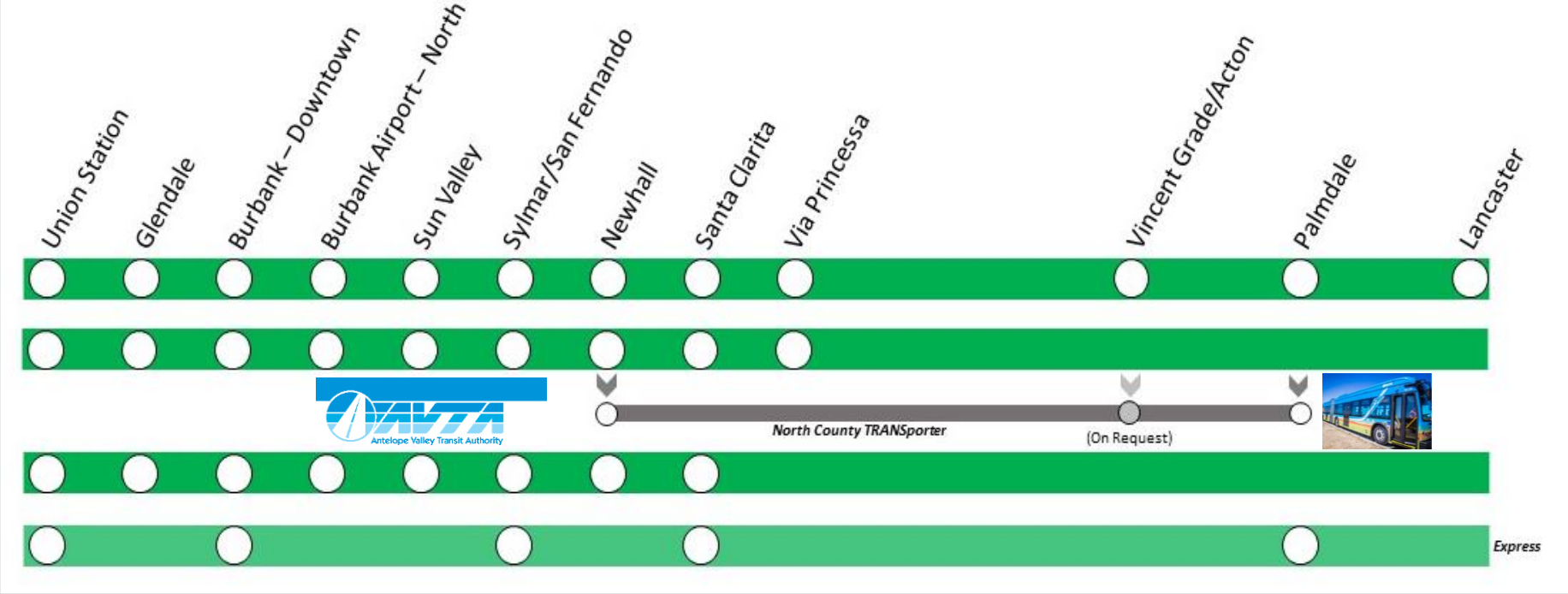
Antelope Valley Line Study Context

Existing net cost to operate and maintain the Antelope Valley Line is $34.5 million with 15 daily round trips using 6 train sets and AVTA bus support.



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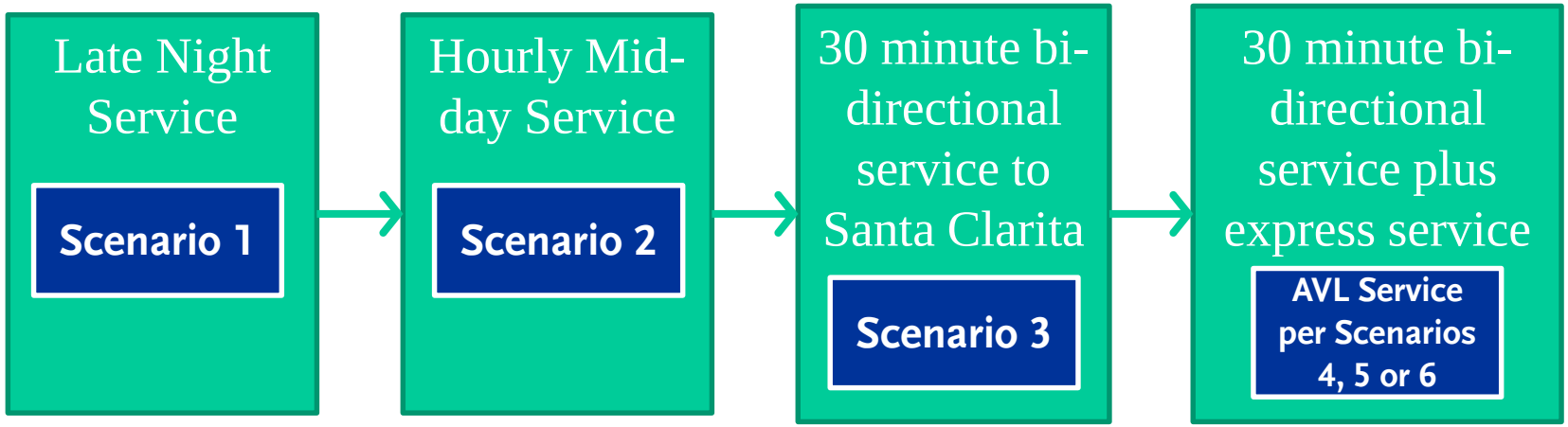
Proposed AVL Service Scenario Plan

1. **Study identified a phased incremental plan for improving AVL service, if funding is identified.**



a) New/Available round trips can be filled by current operators (Metrolink or Union Pacific Railroad) or future potential operators (Amtrak –Pacific Surfliner, California High Speed Rail Authority or Virgin Trains USA)

2. **Proposed Ridership and mode share growth.**

a) Daily AVL trips could increase from 6,500 in FY19 to 15,000 by FY30

b) Projected 9% growth per annum through 2042

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Cost Benefit Analysis and Findings

1. The evaluation process was designed to assess each individual capital improvement on five factors related to their contribution to improving AVL corridor service on a scale of 10 points (lowest) to 50 points (highest):

   (1) Does the capital project directly support improved rail service and deliver ridership benefits?

   (2) Does the capital project support more than one service scenario?

   (3) Is the capital project cost easier to fund and implement faster?

   (4) Is there minimal risk to project impact and right-of-way?

   (5) Is there future flexibility to increase service?

Top Scoring Project: Balboa Double Track Extension (49 out of 50)

This project is required for service scenarios two through six and solely enables hourly service pattern on the AVL

Additional High Scoring Projects: Brighton to McGinley Double Track (43 out of 50)

Canyon to Santa Clarita Siding (40 out of 50)

Lancaster Terminal Improvements (37 out of 50)

These projects are required for service scenarios three through six, minimal impacts and enable 30 minute bi-direction service pattern on the AVL to Santa Clarita.

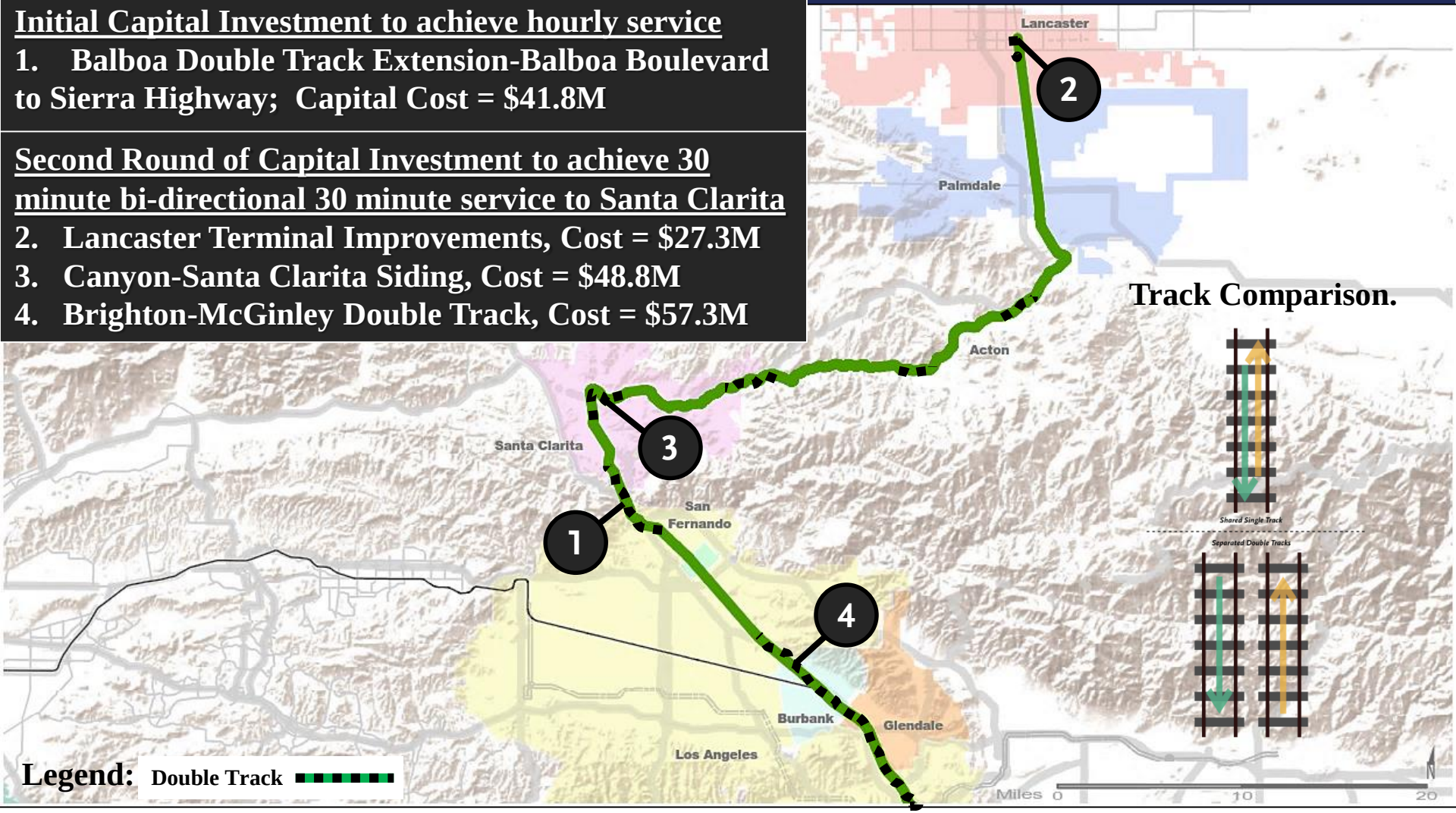
Capital Project Investments for hourly and 30 minute service

Initial Capital Investment to achieve hourly service

1. Balboa Double Track Extension-Balboa Boulevard to Sierra Highway; Capital Cost = $41.8M

Second Round of Capital Investment to achieve 30 minute bi-directional 30 minute service to Santa Clarita

2. Lancaster Terminal Improvements, Cost = $27.3M
3. Canyon-Santa Clarita Siding, Cost = $48.8M
4. Brighton-McGinley Double Track, Cost = $57.3M



The existing **66% single track** will reduce to **58% single track** if these four capital projects are constructed.

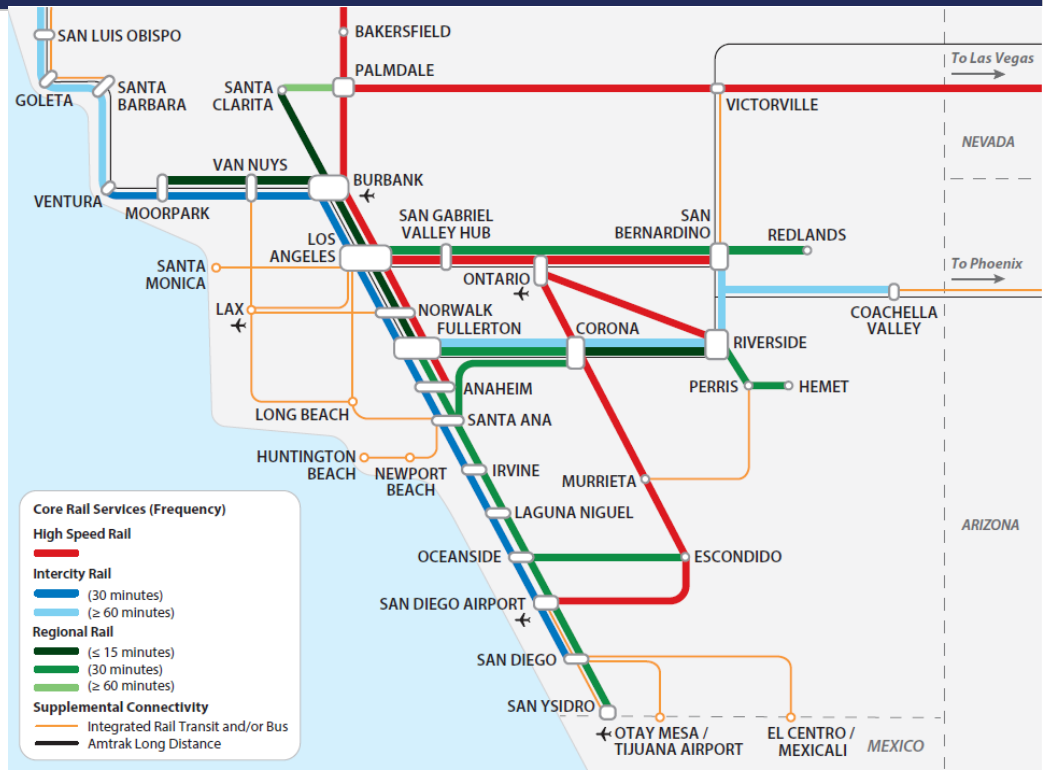
Compatibility with Future Planning Processes

2018 State Rail Plan

1. Findings of this project will enable 2040 Integrated Network Vision for LA County.

High Speed Rail Plan

1. Findings allow HSR blended service/ blended operations with limitations between Palmdale and LA.



Source: 2018 State Rail Plan- 2040 So Cal Vision

a) Original HSR Plan for dedicated alignment extremely costly; funding unlikely

b) Blended service on the AVL route offers potential benefits for CHSRA, Virgin Trains USA, Amtrak and Metrolink rail services

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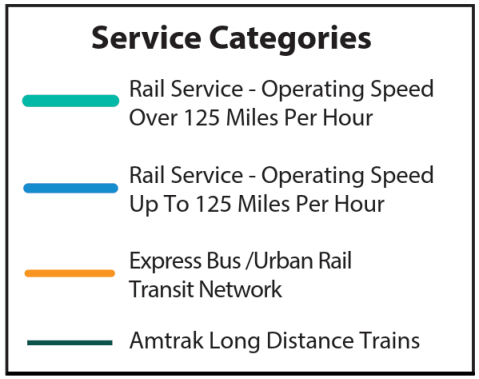
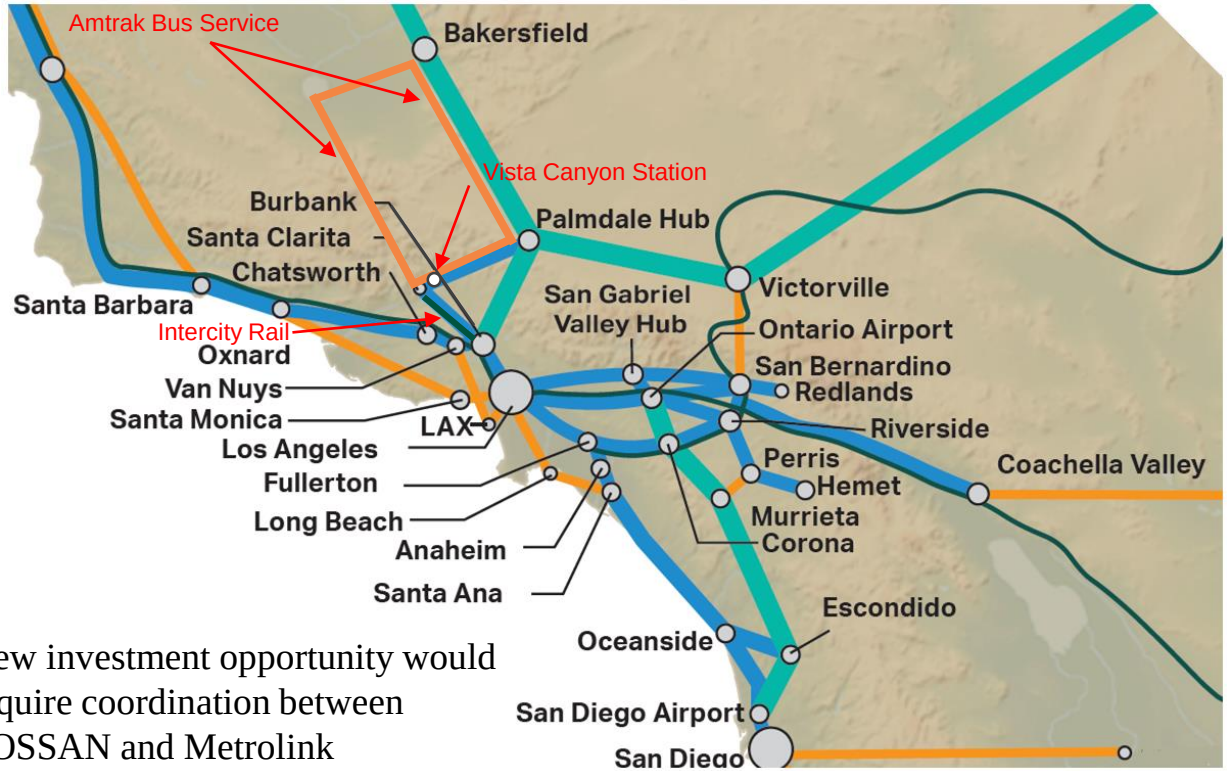
Compatibility with Future Planning Processes

A. Potential New Operator Along the Corridor

1. The State is considering an extension of intercity passenger rail service to Santa Clarita to connect with the Pacific Surfliner service in Los Angeles. This could present an opportunity for through service between Santa Clarita and San Diego with Amtrak bus service to shorten the commute to Bakersfield from the current 3 hours to about 90 minutes(LAUS to Bakersfield).

*This exhibit modified the 2018 State Rail Plan





New investment opportunity would require coordination between LOSSAN and Metrolink

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Compatibility with Future Planning Processes

1. Rail Multiple Unit Technology – Rail Multiple Units (RMU)
   a) Metrolink is developing a Fleet Modernization Plan (Fall 2020) to plan for a zero emissions future.
   b) RMU technology allows for tilting train capability to handle existing tight curves at higher speeds.
   c) Would allow for Metrolink and Other Operators to consider increasing the maximum speed (CA 79 mph)

Source: Redlands Passenger Rail Project (SBCTA)

2. Metrolink
   a) Proposed AVL Capital Projects for the hourly and 30 minute service are consistent with the overall goals of the Southern California Optimized Rail Expansion (SCORE) Program to provide 30 minute service to Santa Clarita and hourly bi-directional service to Palmdale and Lancaster with additional express peak service.

Thank You!