



ITEM 28

CRENSHAW/GREEN LINE OPERATING PLAN

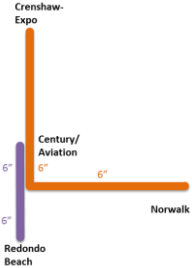









Expo/Crenshaw Station

DECEMBER 6, 2018

OPERATING PLAN OBJECTIVES

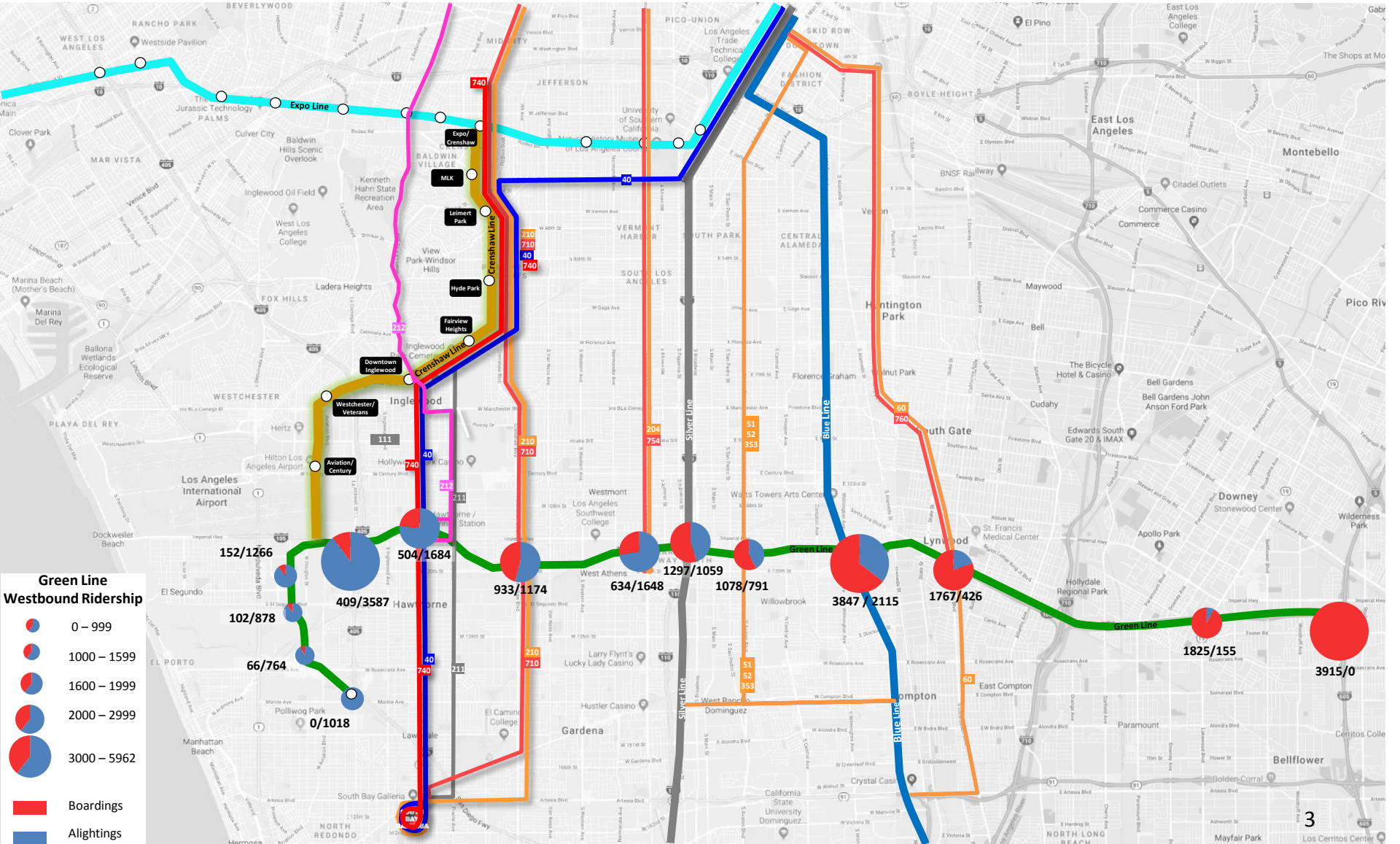
Evaluation of Final 2 Alternatives



	<p><u>C-1</u></p> <ul style="list-style-type: none"> Norwalk-Expo/Crenshaw Redondo Beach-LAX 	<p><u>C-3</u></p> <ul style="list-style-type: none"> Norwalk-Expo/Crenshaw Redondo Beach-Willowbrook 
<p>Direct connections to LAX Airport from all directions</p>	<ul style="list-style-type: none"> Direct service to 5th busiest airport in the world from all directions, and improving access to over 620K jobs within the LAX area 	<ul style="list-style-type: none"> No direct service to and from LAX from South Bay for visitors and workers 
<p>Special event service to new NFL Stadium</p>	<ul style="list-style-type: none"> Opportunity for special event service to Downtown Inglewood from all directions for NFL, Super Bowl, World Cup, Olympics, etc. 	<ul style="list-style-type: none"> No opportunity to route South Bay trains to Downtown Inglewood for special events 
<p>Provides optimal capacity to meet current and future demand</p>	<ul style="list-style-type: none"> Matches capacity with demand on all three segments Allows for 3-car trains along Crenshaw when ridership grows or for special events 	<ul style="list-style-type: none"> Overserves I-105 segment at a cost of \$10M/year Cannot expand to 3-car trains on Crenshaw due increased power consumption on I-105 segment 
<p>New opportunities for South Bay residents</p>	<ul style="list-style-type: none"> New opportunity to provide north/south service to take South Bay residents where they want to go 	<ul style="list-style-type: none"> Continues serving east/west alignment, which is very lightly used by South Bay residents 

CRENSHAW/GREEN LINE

Bus/Rail Connections



GREEN LINE

Average # People Travelling Each Segment



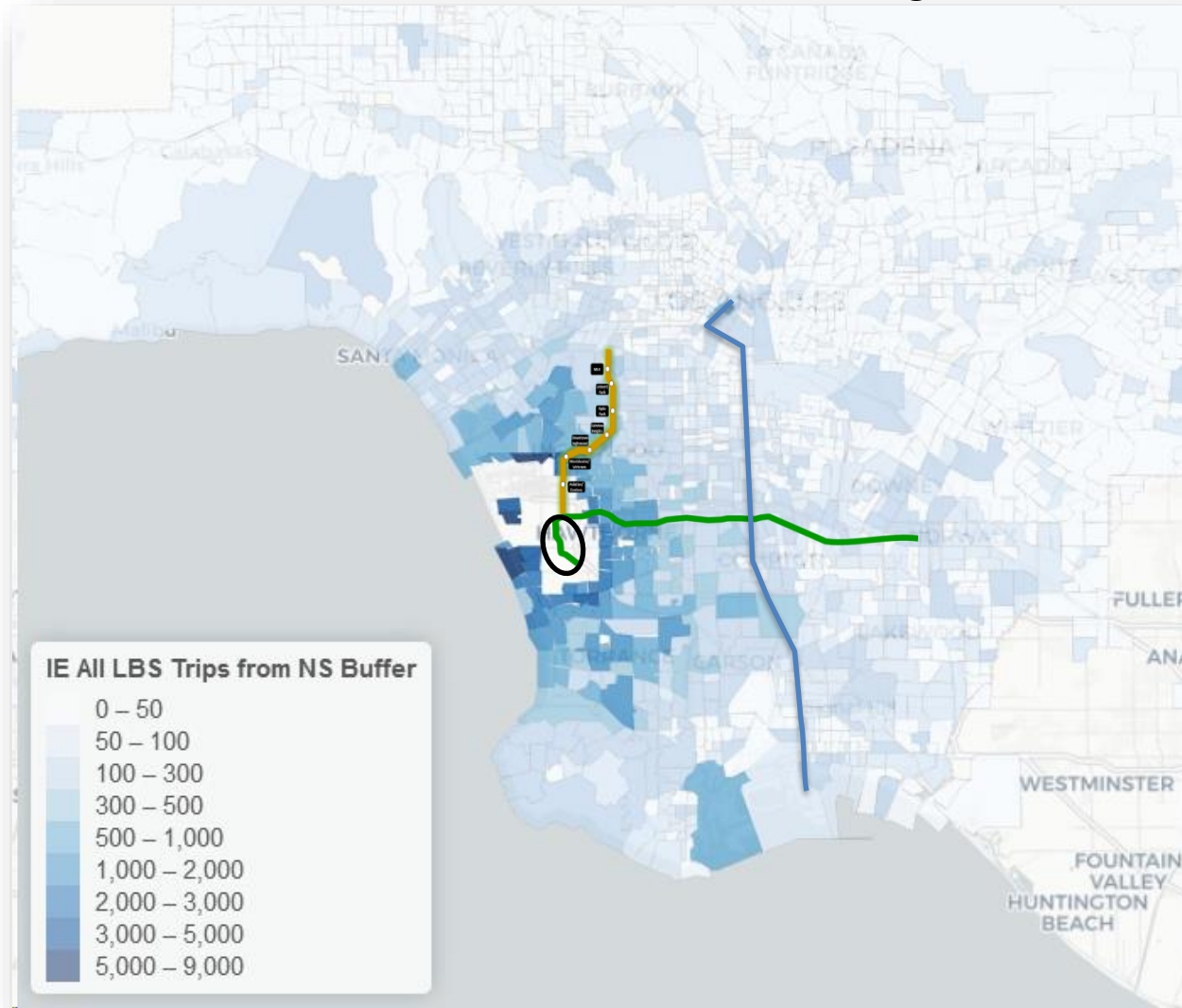
Between	Persons	Percent
2 ↔ 2 NOR NOR	12,240	77%
1 ↔ 2 SB NOR	3,392	21%
1 ↔ 1 SB SB	197	1%
Total	15,828	100%



2. All Travel (cell phone data) RB-Mariposa Green Line Destinations



All Destinations from Redondo Beach Segment



NEW OPPORTUNITIES FOR SOUTH BAY

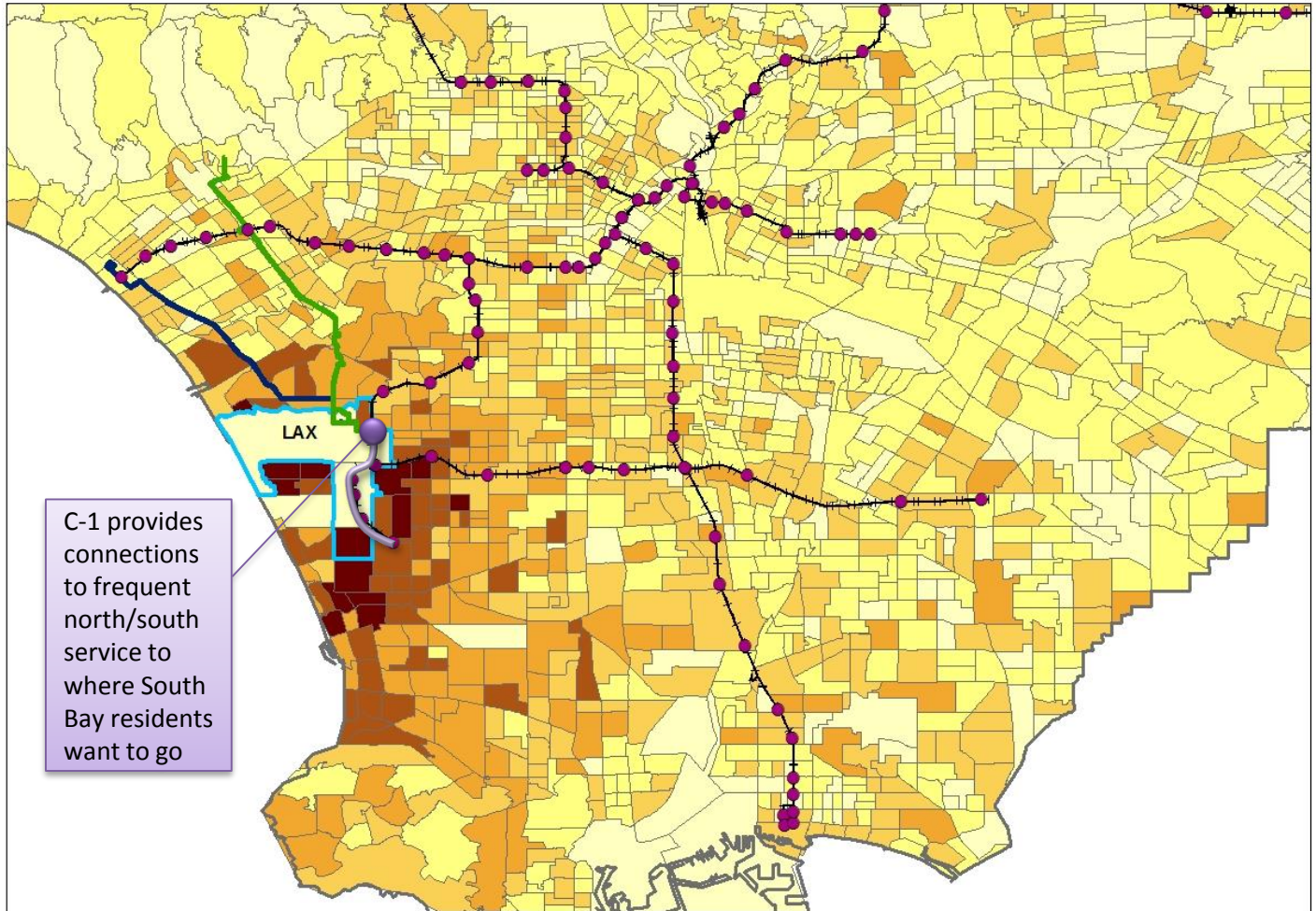
C-1 Provides Better Connections to Jobs



Commute Work Flows to LAX-Aerospace Corridor From Los Angeles County Census Journey to Work 2006 - 2010 Survey

Legend

- Metro Rail Stations
 - Culver City 6
 - Santa Monica 3
 - Metro Rail System
 - LAX-Aerospace Corridor
- Workers**
- 4 <= 45
 - 45 <= 110
 - 110 <= 230
 - 230 <= 415
 - 415 <= 765
 - Los Angeles County



ACCESS TO MAJOR SPECIAL EVENTS

Inglewood Sports & Entertainment District



-  C-1 South Bay Route
-  C-1 Special Event Service
-  C-3 South Bay Route
-  Downtown Inglewood Station
-  22 NFL games per year
-  Super Bowl (2022)
-  NCAA Football Championship (2023)
-  FIFA World Cup (2026)
-  Olympics and Paralympics Games (2028)

TRACTION POWER CONSTRAINT

Impact to Train Performance with Alt C-3



- 2-car trains at 3 min headways on Green Line (Aviation – Willowbrook/Rosa Parks)
- Cars designed to operate at 750VDC for best sustainable performance (normal acceleration, HVAC, lighting, etc.)

- 2-car trains at 3 min headways - power degrades to a **marginal level** (above 600vdc)
- With one substation off-line and/or less than perfect train spacing - power degrades to an **unsustainable level** (below 600 vdc)
- Alternating 2- and 3-car trains at 3 min headways; a substation off-line; and less than perfect train spacing - power degrades to an **unacceptable level** (below 500vdc)

- Impacts of unsustainable low voltage operations to customers:
 - Slow speed and delayed trains
- Impacts of unacceptable low voltage operations to customers:
 - Loss of HVAC
 - Loss of full body lighting (emergency lighting only)
 - Loss of power/stranded trains

- 2-car trains at 3 min headways on the green line poses service reliability risks;
- Alternating 2- and 3-car trains at 3 min headways poses clear service reliability risks.

RESOURCE REQUIREMENT

C1 vs C3



	Alt C-1	Alt C-3
Vehicle Requirement (Peak + Spares)	53	60
Ann Rev Vehicle Hrs	195,000	221,000
Ann Operating Cost	\$77M	\$87M

	Cost/RVH
Transportation	\$62
Maintenance	\$201
Other Operating	\$132
Total	\$395



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