

Metro Green Line - Crenshaw / LAX Line Operating Options

South Bay Cities Council of Governments
Recommendations of Preferred Alternatives

REVISED

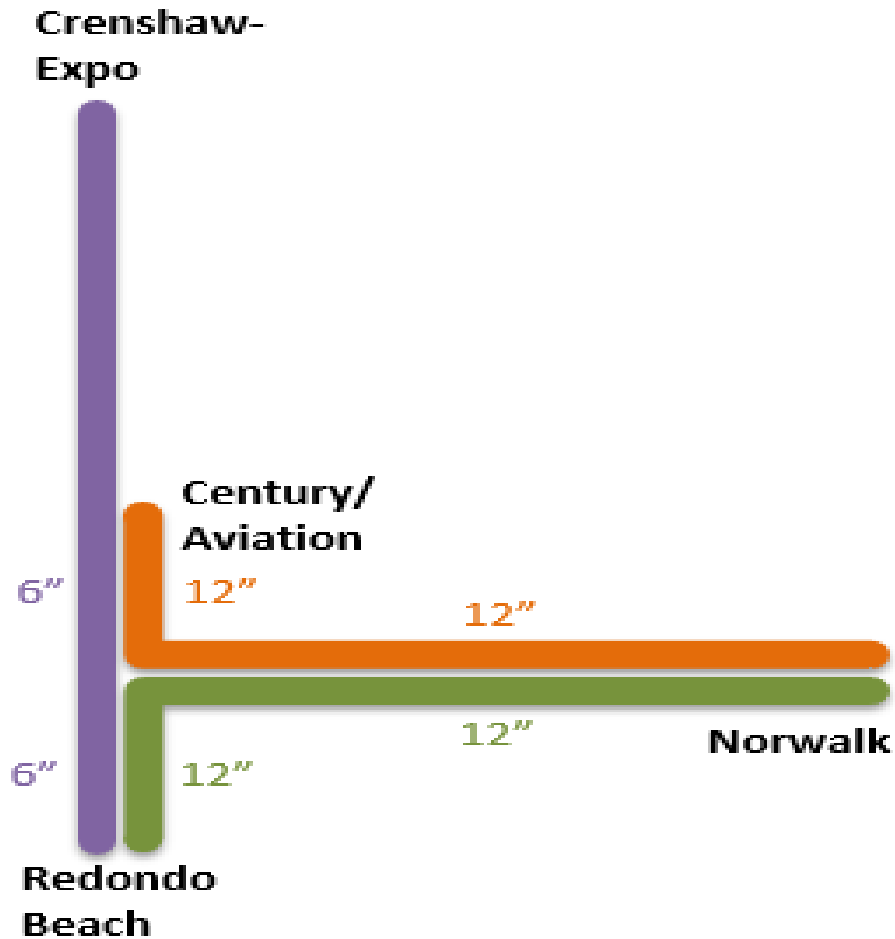
September 10, 2018, 10 a. m.

SBCCOG, 20285 Western Blvd., Suite 100, Torrance

South Bay Decision Considerations

- ❖ Preserve current 6-minute peak service on Green Line between Norwalk and the South Bay; options with trains every 10 -12 minutes are overcrowded
- ❖ Ideally, One-seat ride between South Bay and Crenshaw / Exposition Line and Green Line Norwalk Station
- ❖ As a regional compromise, no more than 1 transfer between South Bay and Exposition Line or Green Line to Norwalk with max. 3 min. transfer delay
- ❖ Ensure that train lengths and platform lengths keep train standees within service standard (below 1.75% of seating capacity)
- ❖ **What can actually work on opening day?**

Alt B-1: Crenshaw/Redondo Green Branch (EIR)



NOT RECOMMENDED

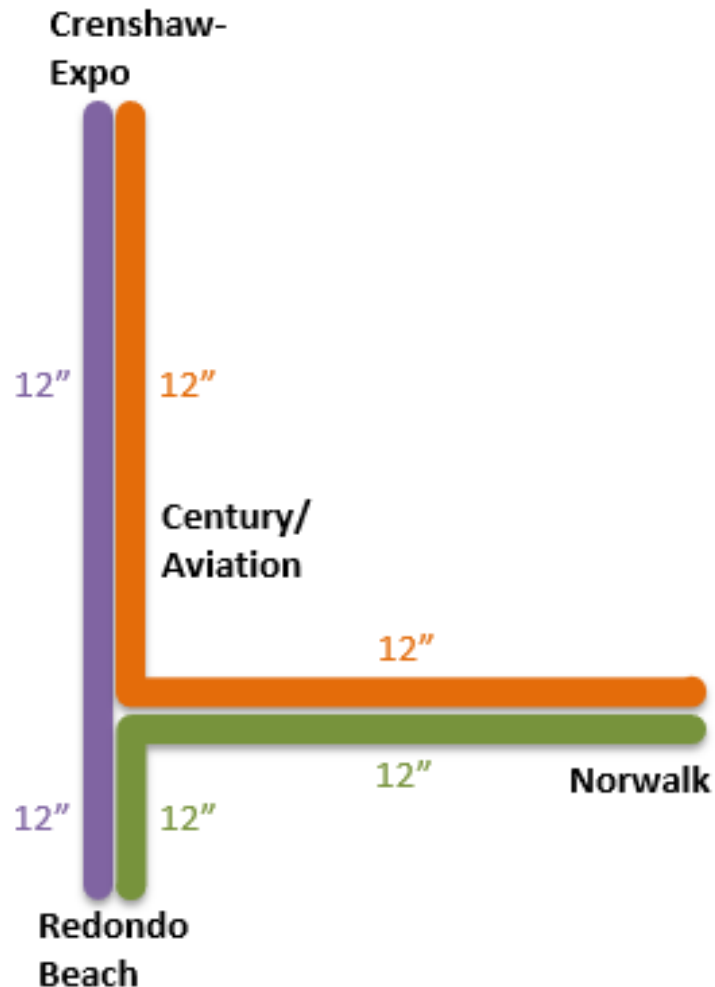
Peak Service under this option:

- One-seat ride between Exposition Line and Redondo Beach station; train every 6 minutes

Flaws:

- ❖ Green Line to South Bay will be reduced from 6 minute headways to 12 minute headways
- ❖ Norwalk to Exposition riders would have to transfer at the Century / Aviation station; 3 to 6 minute transfer delay
- ❖ To avoid overcrowding, Green Line would need three-car peak-period trains and 5 South Bay platforms would have to be lengthened to 3-car platforms

Alt B-2: Crenshaw/Green Branch



NOT RECOMMENDED

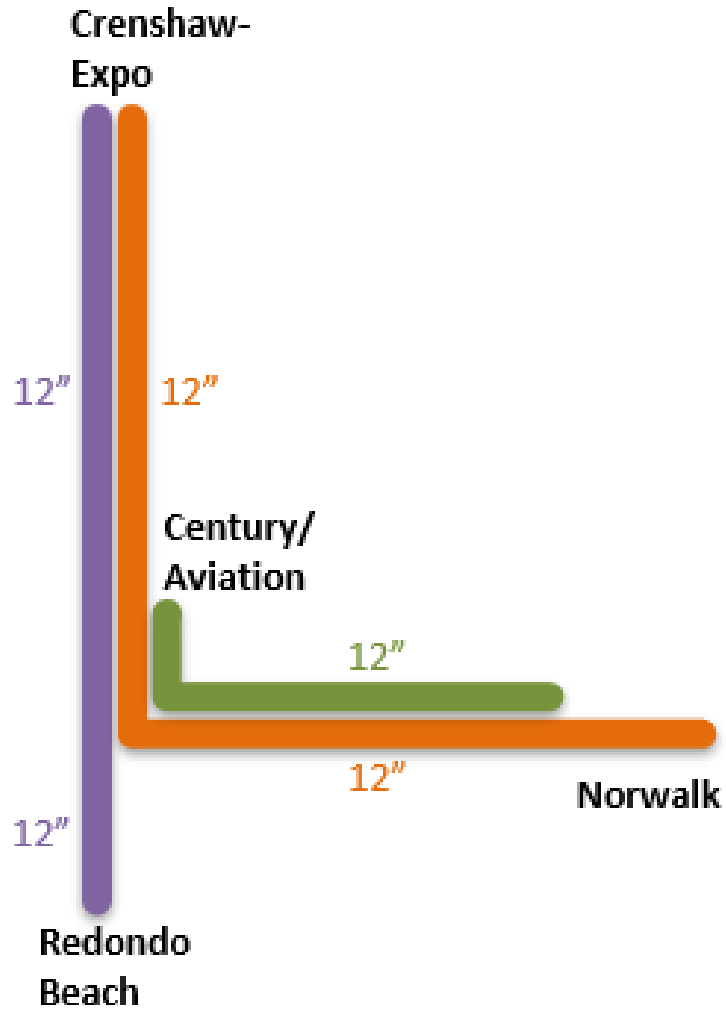
Peak Service under this option:

- One-seat ride between all three routes

Flaws:

- ❖ Peak Hour Green Line train frequency would be reduced from 6 minute headways to 12 minutes
- ❖ Green Line would need three-car peak-hour trains and 5 South Bay station platforms would need to be expanded from 2-car platforms to 3-car platforms to prevent overcrowding

Alt B-3: Willowbrook/RP – Century/Aviation Shortline



NOT RECOMMENDED

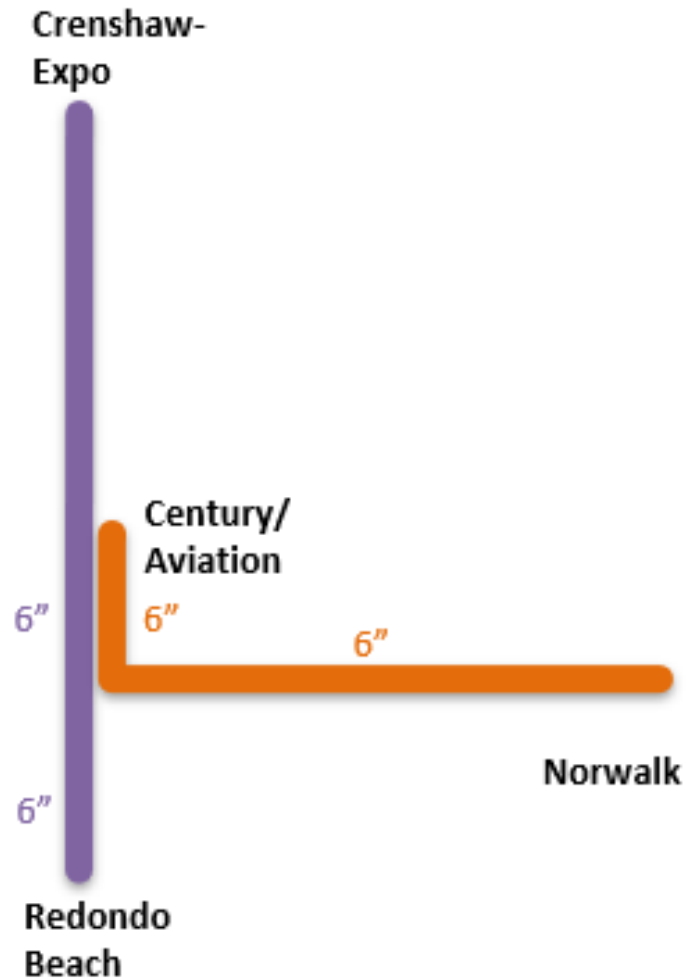
Peak Service under this option:

- One-seat ride between Exposition and Redondo Beach and between Norwalk and Exposition; train every 12 minutes
- One-seat Short Line ride between Blue Line Rosa Parks Station and Century / Aviation Station; in this segment train every 6 minutes

Flaws:

- ❖ **Green Line South riders will need to transfer at Crenshaw-LAX Line's Century / Aviation station which would add 10 minutes to the trip because peak-period train frequencies would be reduced from every 6 minutes to every 12 minutes**

Alt C-2: Crenshaw/Redondo Interline, Norwalk Shortline



NOT RECOMMENDED

ORIGINAL STAFF RECOMMENDATION (Alternative 2)

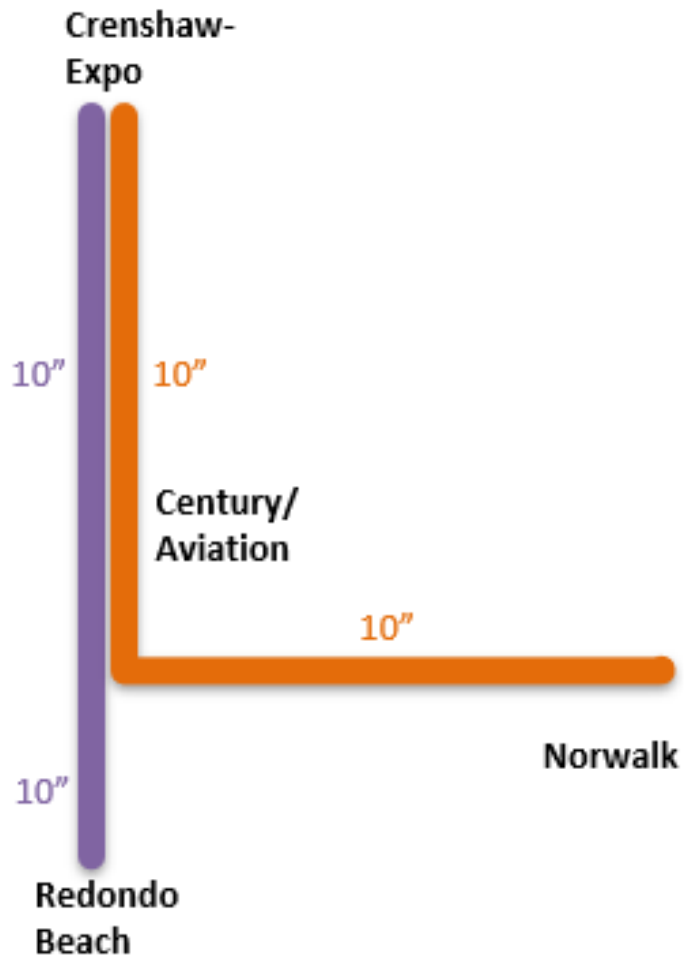
Peak service under this option:

- One-seat ride between Exposition and Redondo Beach; train every 6 minutes
- One-seat ride between Norwalk and Century / Aviation Station; train every 6 minutes; Norwalk to Exposition Line riders will need to transfer at Century Aviation; 3 minute transfer delay

Flaws:

- ❖ **Green Line South riders will need to transfer at Crenshaw-LAX Century / Aviation station for trips to Norwalk. The peak-period transfer will add 7 minutes to the current Green Line Norwalk to South Bay trip**

Alt D-1: Alternate Norwalk/ Crenshaw, Redondo/Crenshaw

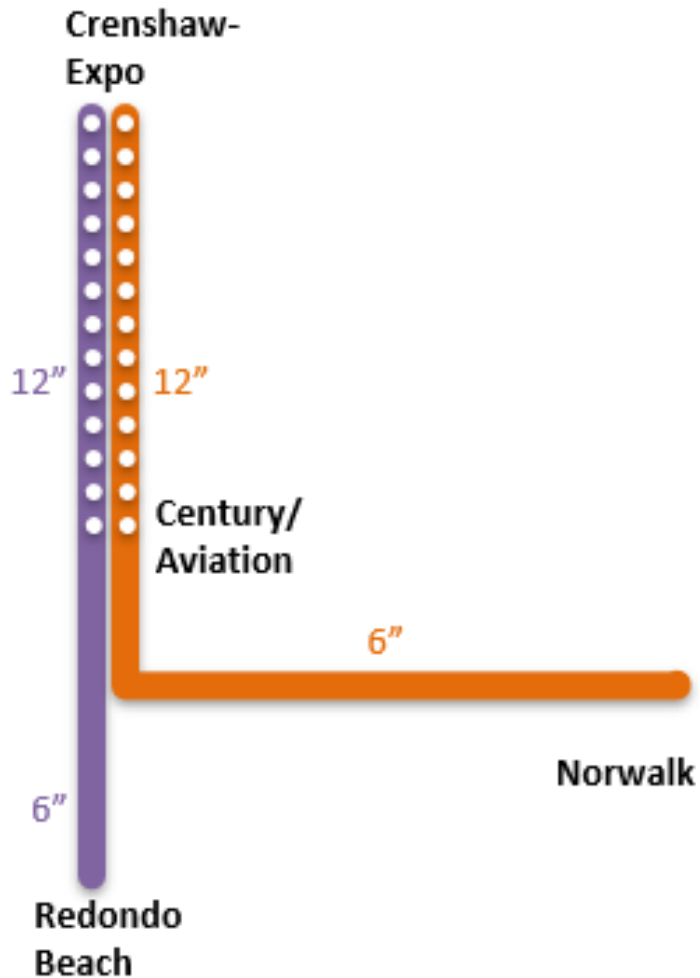


NOT RECOMMENDED

Peak service under this option:

- One-seat ride between the Exposition Line and Redondo Beach; train every 10 minutes
- One-seat ride between Norwalk and the Exposition Line; train every 10 minutes
- **Flaws:**
 - ❖ **Train frequency is reduced from 6 minutes to 10 minutes:** some peak-period trains exceed 175% load standard; requires 3-car trains and 3-car platforms
 - ❖ **Green Line riders will need to transfer at the Crenshaw-LAX Century / Aviation station to travel between the Norwalk and Redondo Beach stations; 9 minute transfer delay**

Alt D-2: Alternate Norwalk/ Crenshaw, Redondo/Crenshaw



NOT RECOMMENDED

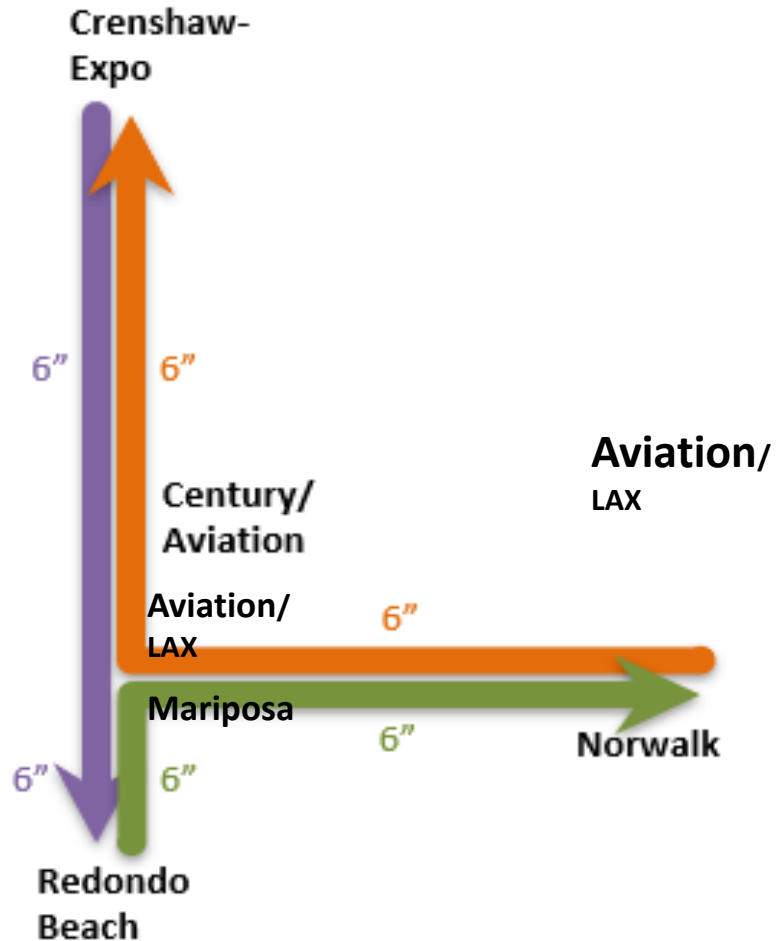
Peak hour service under this option:

- One seat ride between Norwalk and Century / Aviation station every 6 minutes. (Every other train travels to Exposition, the other turns back at the Aviation / Century station) - **ADDED CONFUSION.**
- One-seat ride between Redondo Beach and Century / Aviation station every 6 minutes. (Every other train travels to Exposition, the other turns back at the Aviation / Century station) - **ADDED CONFUSION.**

Flaws

- ❖ **Current Green Line riders will need to transfer at the Crenshaw-LAX Century / Aviation station to travel between the Norwalk and Redondo Beach stations adding 7 minutes to current Green Line trip**
- ❖ **Although Green Line and Green Line south have 6 minute frequencies to Century / Aviation, trains north of the station to Exposition will be every 12 minutes for the Norwalk to Exposition route and 12 minutes for the South Bay to Exposition Route. If riders are on the trains that turn back, transferring from one train to another at the Century / Aviation station will add 3 minutes delay**

Alt D-3: One Way Operations



NOT RECOMMENDED

Peak service under this option (all trains every 6 minutes) :

- One-seat ride southbound from Exposition to Redondo Beach
- One-seat ride eastbound from Redondo Beach to Norwalk
- One-seat ride northbound from Norwalk to Exposition

Flaws:

- ❖ Green Line Riders from Norwalk to South Bay will have to transfer at the Crenshaw-LAX Line Century / Aviation station. Green Line South riders to Exposition will have to transfer at the Green Line Aviation/LAX station. Exposition to Norwalk riders will have to transfer at the Mariposa Station
- ❖ **CONFUSING:** Because this option is a three-route one-way loop of one-seat rides, if you have a one-seat ride in one direction, you will have to transfer between trains on your return trip

SUMMARY: Eliminate Alternatives That Don't Work On Opening Day

Eliminate **B-1, B-2, B-3** due to 12 min. headways; Green Line South 2-car trains would be overcrowded; 3-car platform extensions will not be available on opening day to serve 3-car trains.

Eliminate **C-1, C-2** due to 7-minute transfer delay at Century/Aviation station for Green Line South riders.

Get more information on why **C-3** forces current Green Line riders to transfer between the Blue Line and Norwalk; explore if there are better alternatives that would allow current Green Line South riders and Green Line Exposition riders to board at Norwalk.

Eliminate Alternatives That Don't Work On Opening Day

(Continued)

Eliminate **D-1** due to 10-minute transfer delay at Century/Aviation for all Green Line South riders and overcrowding with 2-car trains on 10 minute headways.

Eliminate **D-2** due to 7-minute transfer delay at Century/Aviation station for Green Line South riders to Norwalk.

Eliminate **D-3** due to a 6 minute transfer delay at Century/Aviation station for all Green Line to Norwalk riders and a 7 minute delay for all Norwalk to Redondo Beach riders.

Continue to consider **C-3, C-4 and C-5.**

SBCCOG Recommendations

C-5 PREFERRED

Green Line South to Exposition Line

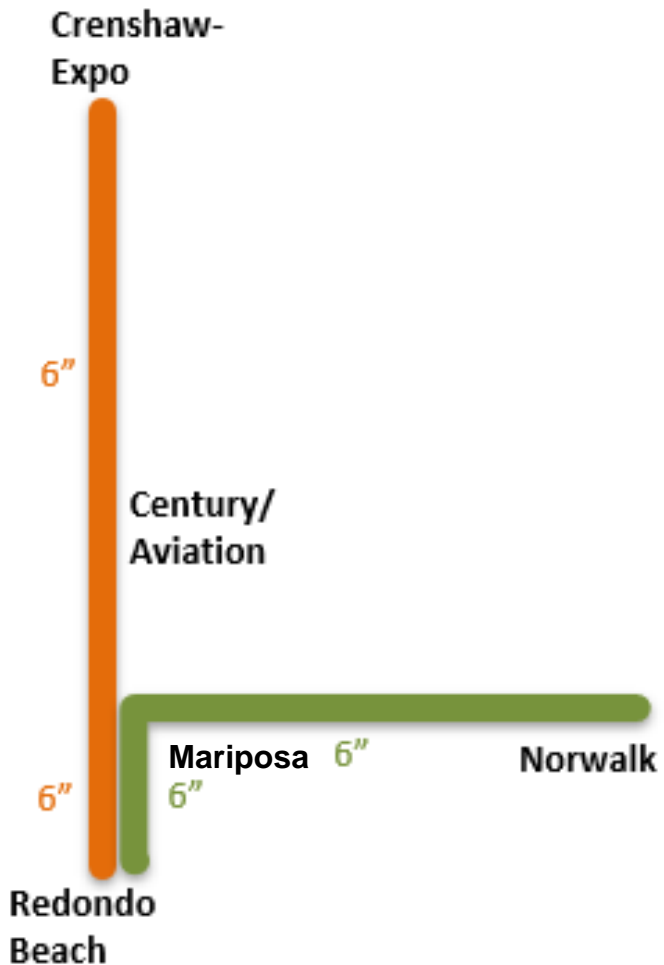
- Green Line South to Norwalk

C-4 COMPROMISE

Green Line South to Norwalk

- Green Line / Crenshaw: Shortline to Blue Line

Alt C-5: Green Line, Crenshaw To Redondo Beach



SBCCOG RECOMMENDED (Ideal for South Bay riders)

Peak service under this option:

- One-seat ride between Exposition and Redondo Beach; train every 6 minutes
- One-seat ride between Norwalk and Redondo Beach; train every 6 minutes
- One-transfer ride between Norwalk and Exposition

FLAWS

- ❖ **Crenshaw / Green Line riders will have to transfer at the Green Line Mariposa Station to travel to Airport and Exposition; 7 min. transfer delay for Norwalk / Exposition riders.**

Alt C-4: Green Line, Crenshaw To Willowbrook/Rosa Parks



SBCCOG RECOMMENDED COMPROMISE (due to ridership difference between Norwalk-Exposition route & Norwalk-South Bay route)

Peak service under this option:

- Retains One-seat Green Line ride between Norwalk and Redondo Beach; train every 6 minutes (status quo)
- One-seat ride between Exposition and Blue Line Rosa Parks Station; train every 6 minutes

Flaws:

- ❖ **South Bay riders travelling to Exposition and LAX will have a 3-minute transfer at the Green Line's Aviation / LAX station. Unknown number of eastern Green Line riders will have to transfer at a Green Line station west of the Blue Line to travel to Exposition with a 3-minute transfer delay.**

Gateway COG Recommendations

C-3 PRINCIPAL RECOMMENDATION

Green Line South: Shortline to Blue Line;
Green Line/Crenshaw - Norwalk to Exposition Line

C-1 BACKUP RECOMMENDATION

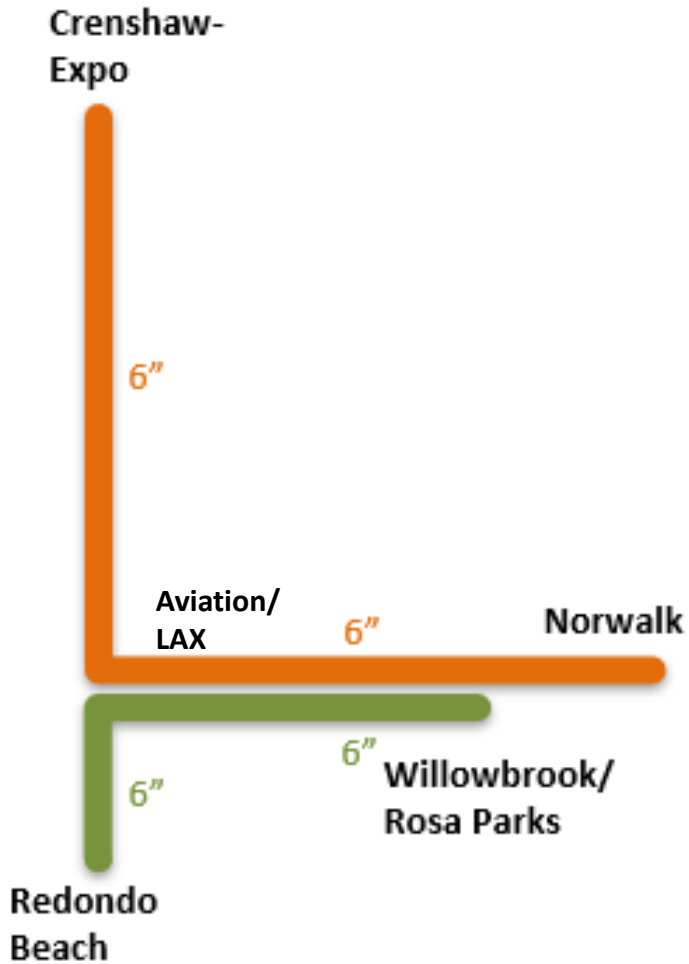
Green Line South Shortline between Redondo Beach and LAX;
Green Line –Norwalk to Exposition

Extend Green Line Century/Imperial (LAX) station platform to 3-car train

Increase traction power on Crenshaw Blvd. segment to accommodate shorter headways

Improve turnback facilities at Norwalk to allow all trains on 6-minute headways

Alt C-3: Green Line shortline, Crenshaw to Norwalk



Gateway COG FIRST RECOMMENDATION:

Peak service under this option:

- One-seat ride between Exposition and Norwalk; train every 6 minutes

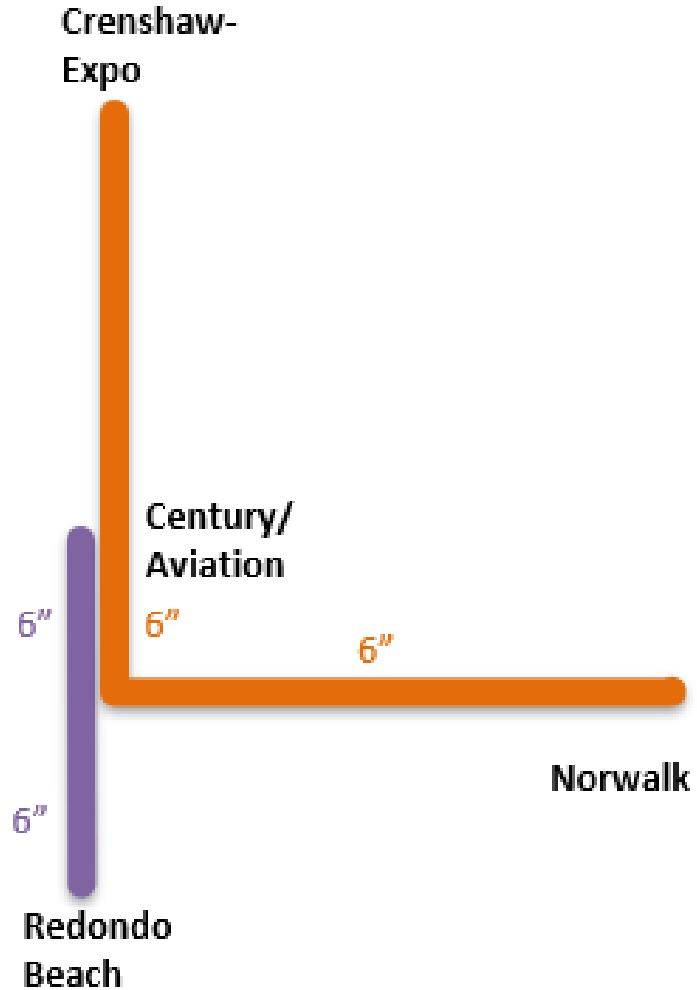
ADD TRANSFER TO AIRPORT 3 MINUTES

- One-seat ride between Blue Line Rosa Parks Station and Redondo Beach every 6 minutes

Flaws:

- ❖ **Eliminates current Green Line one-seat ride between Norwalk and South Bay**
- ❖ **Green Line Riders that board or alight east of the Blue Line will need to transfer to the Green Line to South Bay segment to travel to South Bay stations. South Bay riders travelling to the Green Line Norwalk station or to the Exposition line will need to transfer; 3-minute peak-period transfer delay in each case**

Alt C-1: Crenshaw/Norwalk Interline with Redondo Shuttle



NOT RECOMMENDED; Gateway COG backup ORIGINAL STAFF RECOMMENDATION (Alternative 1)

Peak service under this option:

- One-seat ride between Norwalk and Exposition; train every 6 minutes
- One-seat ride from Century / Aviation Station to Redondo Beach Station; train every 6 minutes

Flaws:

- ❖ **Green Line South riders will need to transfer at Crenshaw-LAX Line's Century / Aviation station for trips either to Norwalk or the Exposition Line. The peak-hour transfer will add 3 minutes to Exposition and 7 minutes to the current Green Line between Norwalk and the South Bay**

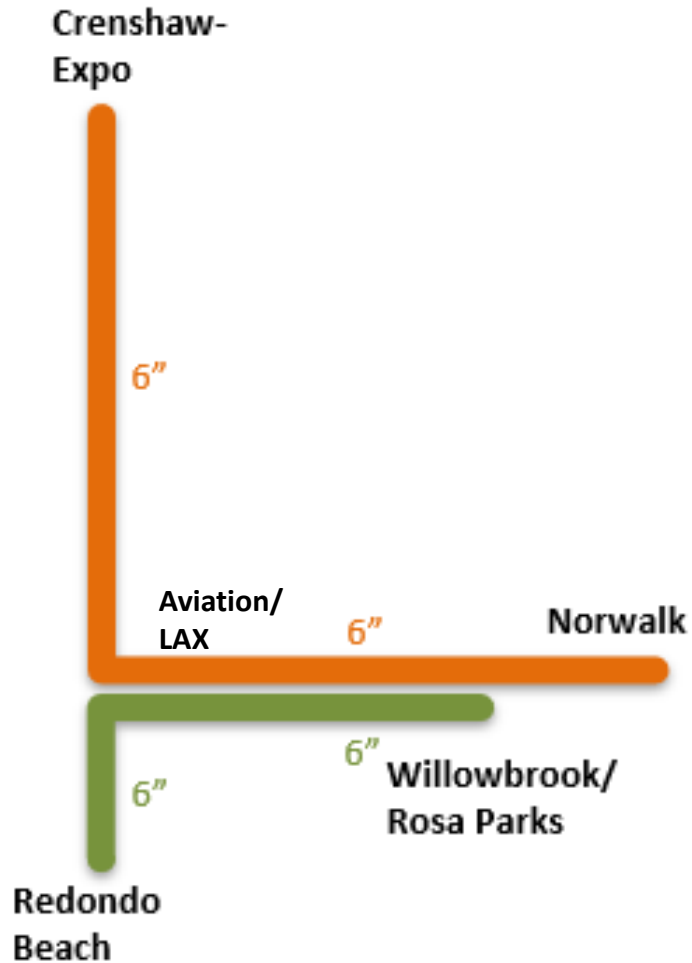
SBCCOG Compromise Recommendation

C-3 Green Line South: Shortline to Blue Line;
Green Line/Crenshaw - Norwalk to Exposition Line

Immediate needs to improve opening day service:

- Extend Green Line Century/Imperial (LAX) station platform to accommodate 3-car train
- Increase traction power on Crenshaw Blvd. segment to accommodate shorter headways
- Improve turnback facilities at Norwalk to allow all trains on 6-minute headways

Alt C-3: Green Line shortline, Crenshaw to Norwalk



Gateway COG RECOMMENDATION & SBCCOG Regional Compromise Recommendation

Peak service under this option:

- One-seat ride between Exposition and Norwalk; train every 6 minutes
- **ADD TRANSFER TO AIRPORT 3 MINUTES**
- One-seat ride between Blue Line Rosa Parks Station and Redondo Beach every 6 minutes as well as Silver Line

Flaws:

- ❖ **Eliminates current Green Line one-seat ride between Norwalk and South Bay**
- ❖ **Green Line Riders that board or alight east of the Blue Line will need to transfer to the Green Line to South Bay segment to travel to South Bay stations. South Bay riders travelling to the Green Line Norwalk station or to the Exposition line will need to transfer; 3-minute peak-period transfer delay in each case**

Additional Information Needed

How important to South Bay riders is opening day Norwalk to Redondo Beach service compared to Exposition to Redondo Beach?

Why does the line segment East of Blue Line have to be eliminated for existing Green Line riders? Can Alternate 3 and 5 be combined with alternative trains between Norwalk and Blue Line (similar to D-2 treatment of Crenshaw Blvd. trains)

What is the anticipated opening day ridership between Norwalk and LAX? Between Norwalk and the Exposition Line? Between Norwalk and Redondo Beach?

How many riders from the five Green Line South stations are projected to be destined for LAX vs. the Exposition Line?

Can LAX bus service be retained at the Imperial Station so that on opening day, there would be service to the airport from there and you wouldn't need to transfer between trains at the Century/Imperial station then transfer to an airport shuttle a mile north at the Century/Aviation station? Bus shuttle service should be retained until the LAX APM 96th Street station opens.

Advocacy Issues

- ❖ Advocate for 3-car platforms at Aviation/LAX, Mariposa, El Segundo, Douglas and Redondo Beach Green Line South Stations
- ❖ Add more traction power substation(s) to allow more frequent headways on Crenshaw Boulevard
- ❖ Explore ways to improve the capacity and efficiency of the Crenshaw / Green Line WYE
- ❖ Advocate for more Silver Line buses and Commuter Express buses for the South Bay