



Beach Cities Transit Transit Services Study

Draft Plan Presentation

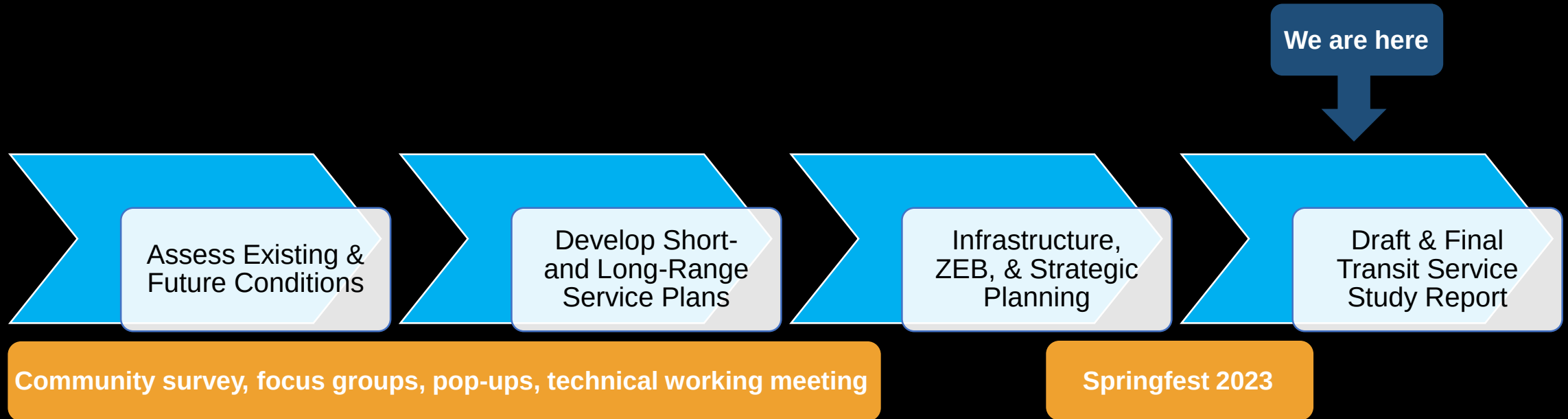
December 5, 2023

Agenda



- I. Background and Project Purpose
- II. Summary of Engagement
- III. Summary of Existing Conditions
- IV. Service Plan
- V. Zero Emission Bus (ZEB) Plan
- VI. Infrastructure and Facility Needs
- VII. Financial Considerations

Project Background and Overview



Summary of Engagement

- Community survey for riders, non-riders, and WAVE riders
- 7 pop-ups across the Beach Cities
- 3 community focus groups
- Technical Working Group meeting with key stakeholders
- Booth at Redondo Beach Springfest 2023

Engagement methods:

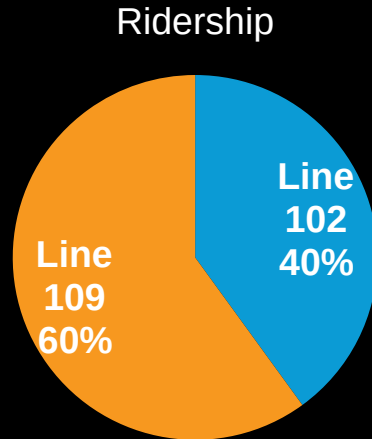
- Redondo Beach and project websites
- BCT Twitter, retweeted by other transit agencies and Beach Cities
- Onboard BCT buses
- Redondo Union High School student e-blast
- Easy Reader: 4-week full page ad & digital ads in June
- Community Services Instagram ads
- Community Services email list
- Direct emails to 109 city partners



Survey Summary

✓ **280** complete responses from riders, non-riders, and WAVE riders

🚶 **89%** of riders walk to the bus stop



Major themes among non-riders:

- General interest in the service but insufficient information to use; lack of public awareness
- Lack of awareness on how to access BCT information
- Factors that would encourage transit use: more information about BCT, trip time comparable to driving

Major themes among WAVE riders:

- Generally satisfied with the service
- Used most frequently for medical trips
- Desire for WAVE to access more locations
- Desire for more information about the WAVE and more travel training

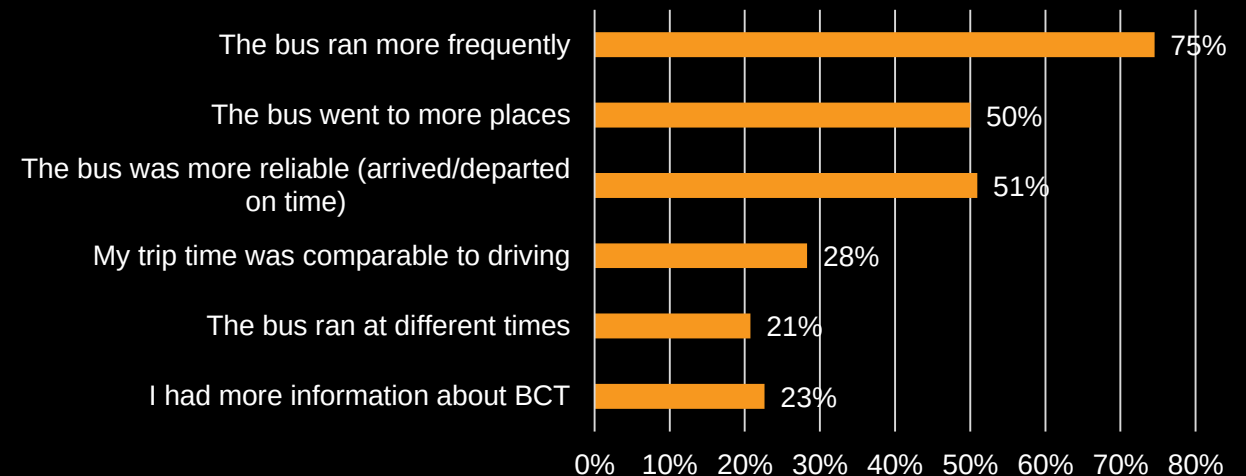
☂️ Most survey respondents are **infrequent riders** (who ride a few times a month or less than once a month)
Amon infrequent riders, most common trip purpose = **entertainment and recreation**

Most common trip purpose among frequent riders = **work or school** 🎓

59% of riders use at least one other transit system → need for connectivity and seamless transfers



Factors that would increase riding frequency



Beach Cities Transit Lines 102 & 109 with South Bay Connections

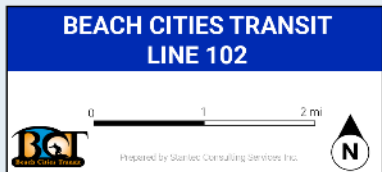


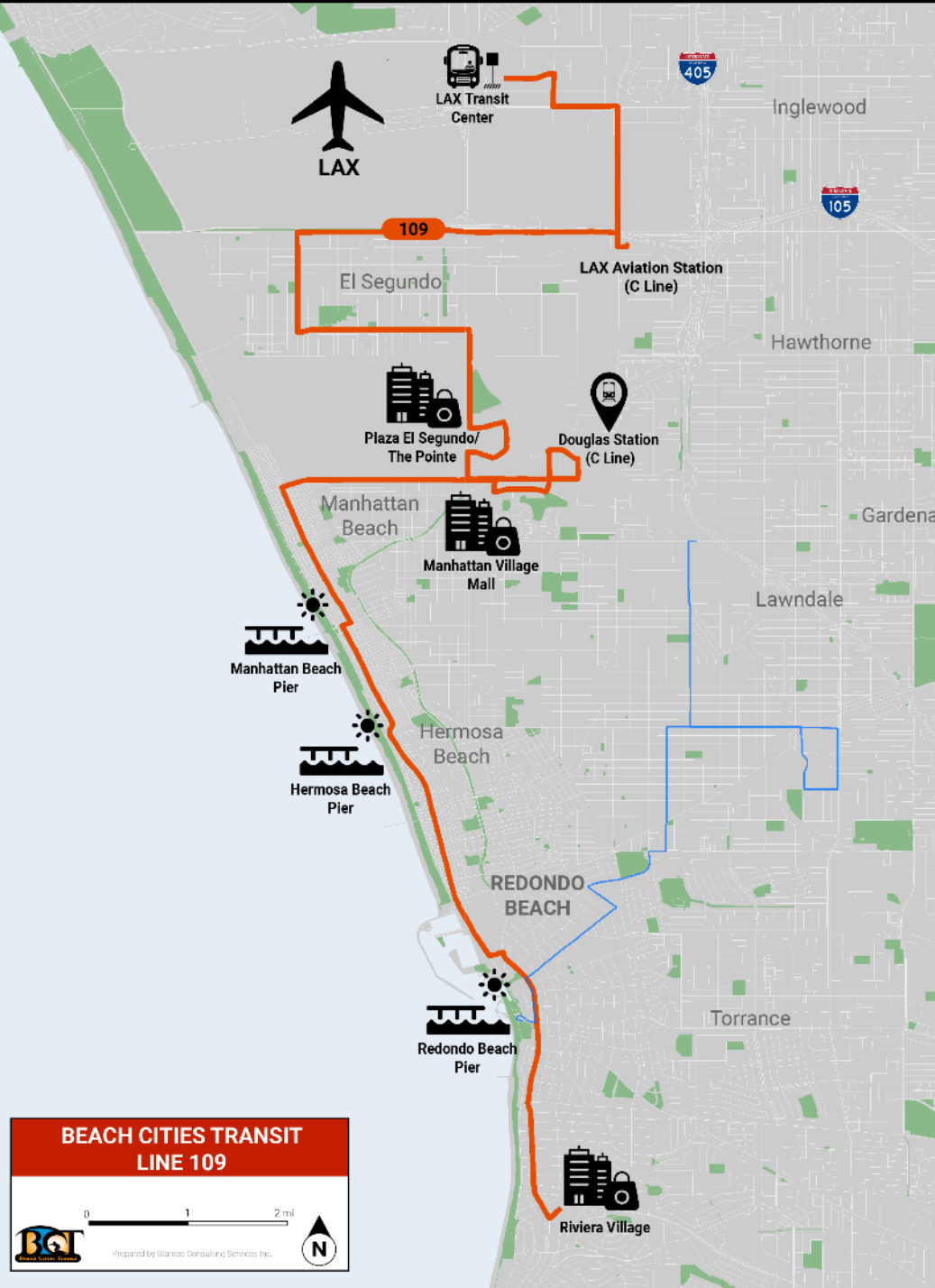
BCT Existing Conditions

- BCT serves the South Bay Region and Beach Cities, including Redondo Beach, Hermosa Beach, Manhattan Beach, El Segundo, and LAX
- BCT operates a fleet of 20 natural gas vehicles for the fixed route and Dial-A-Ride services and provides service to 180,000 people
- Over 1,300 people ride each day. Students account for ~19% of ridership on a school day
- BCT operates two fixed lines (**102, 109**) and Dial-A-Ride service for seniors (62+) and persons with disabilities
- Recently, BCT opened the new Redondo Beach Transit Center near the South Bay Galleria as a new multimodal hub
- WAVE Dial-A-Ride
 - The WAVE Provides door-to-door service to seniors (62+) and people with disabilities
 - Service area: Redondo Beach, Hermosa Beach, and specific satellite locations (mostly medical facilities)
 - The WAVE carries ~35 riders each day

Line 102

- Provides service between the Redondo Beach Pier and Redondo Beach C (Green) Line Station
- Provides school tripper service to Redondo Union High School
- Serves the new Redondo Beach Transit Center
- Service span and frequency:
 - Weekdays 6am-9pm: around every 40 minutes
 - Saturday 8am-9pm: every 30 minutes for most of the day
 - Sundays 9am-7pm: every 40 minutes
- 701 average daily weekday riders when school is in session; 516 average daily weekday riders when school is not in session
- Potential future impacts:
 - C Line Extension
 - South Bay Galleria Redevelopment



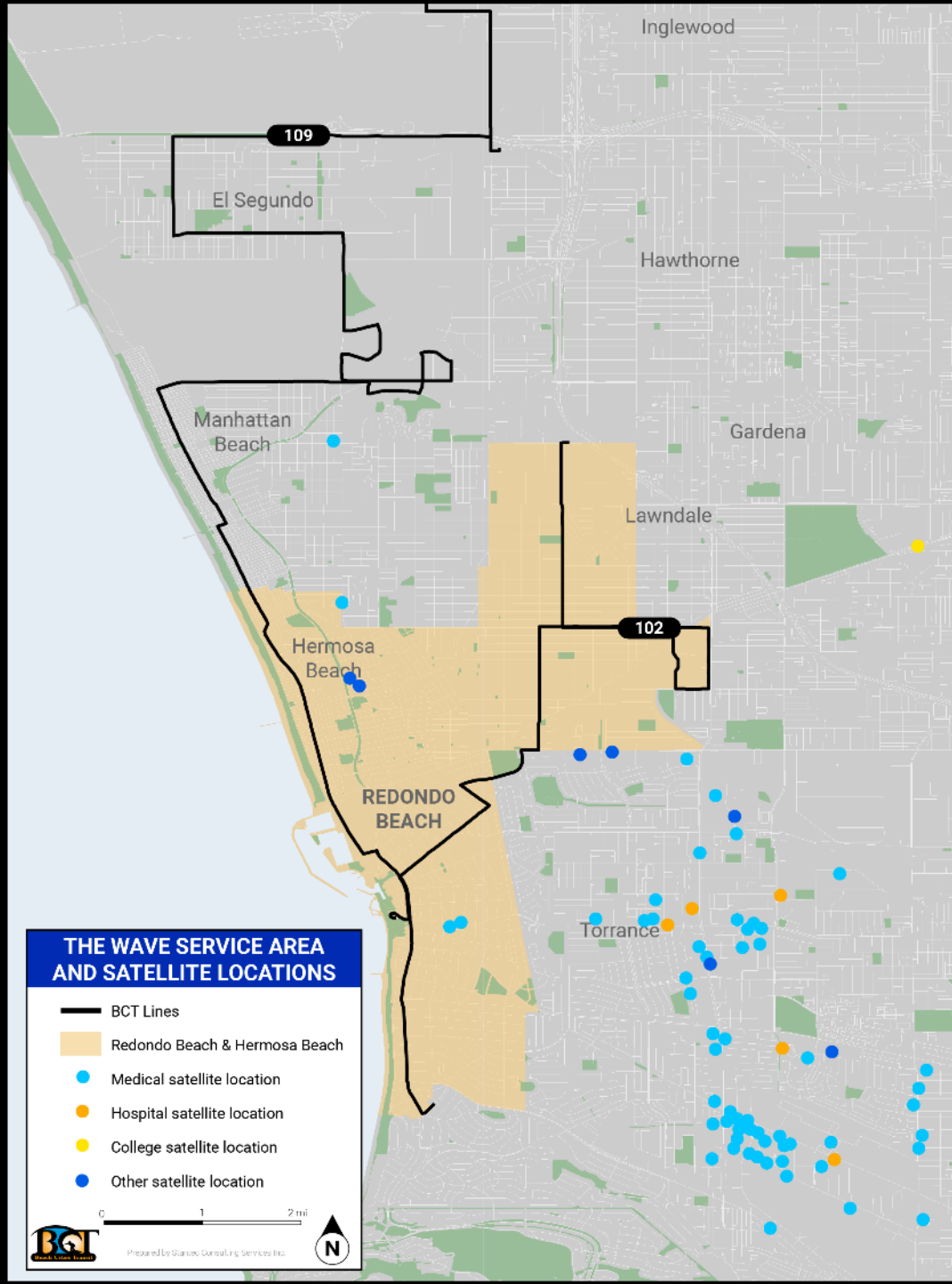


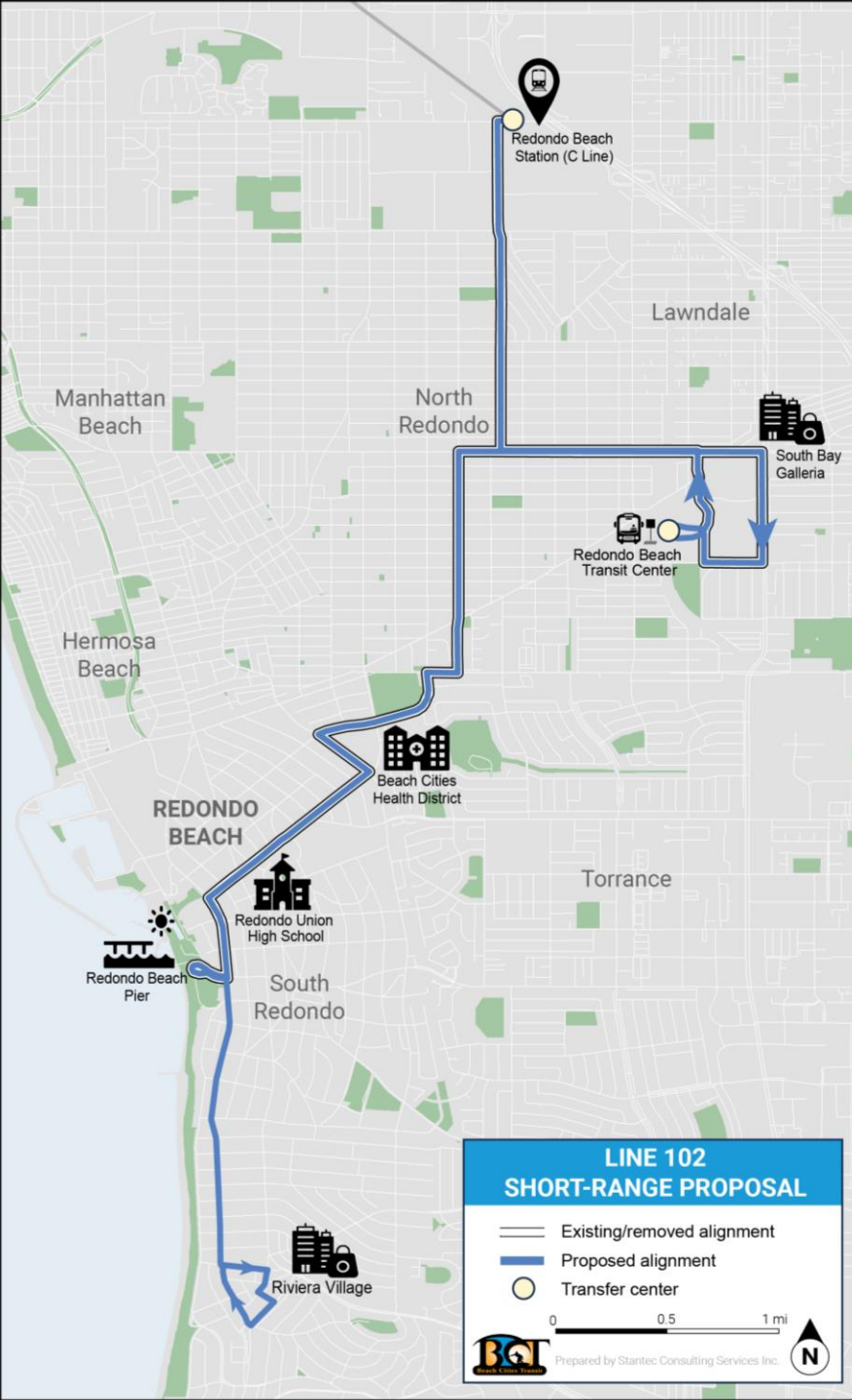
Line 109

- Provides service between the Riviera Village and LAX, including multiple large employment centers in Manhattan Beach and El Segundo
- Service span and frequency:
 - Weekdays 6am-10pm: between every 40 and 55 minutes
 - Weekends 6am-10pm: every 60 minutes
- 580 average daily weekday riders
- Less seasonal fluctuation than Line 102; more consistent ridership year-round
- Future impacts:
 - LAX Automated People Mover
 - LAX Airport Metro Connector Station

The WAVE

- Provides service to seniors (62+) and those with disabilities
- Serves qualifying residents of Redondo Beach, Hermosa Beach, and to specific satellite locations
- Service
 - Weekdays: 6am-8:30pm
 - Weekends: 8am-8:30pm
- 24 average weekday passenger trips in FY21-22 (compared to 51 daily trips pre-COVID)
- 75% of trips begin and end in Redondo Beach
 - 10% of trips begin and end in Hermosa Beach
 - 15% of trips begin and end in satellite locations





Line 102 Recommendations

FY24-25 (Plan Year 2): decrease weekday headways from current headways to around every 33 minutes for most of the day.

- WHY? To provide more frequent service after service became less frequent to serve the Redondo Beach Transit Center

75% of survey respondents would ride more often if the bus ran more frequently

FY24-25 (Plan Year 2): extend Line 102 from its current terminus at the Pier to Riviera Village.

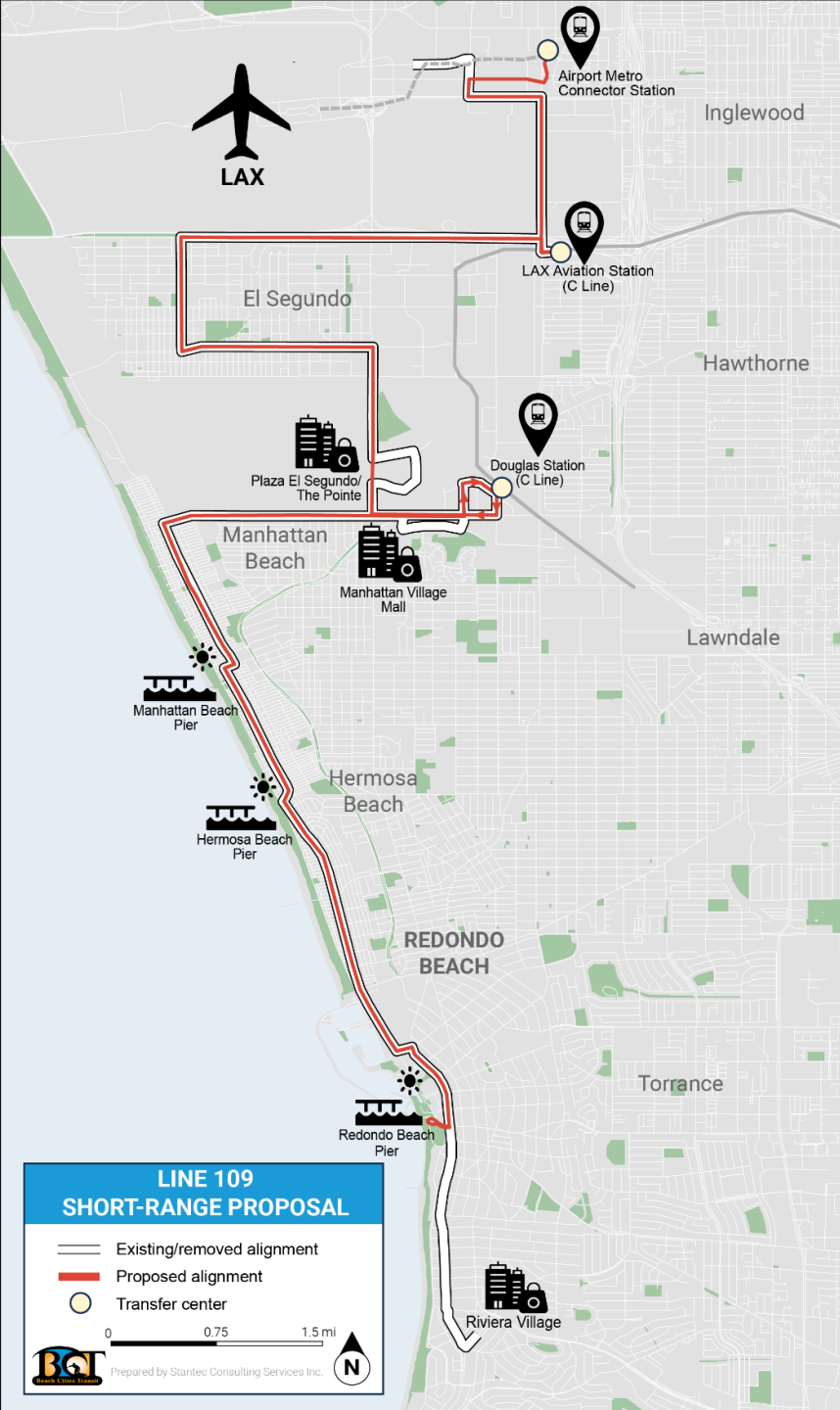
- WHY? Creates new transfer hub at the Pier, creates a one-seat ride for South Redondo students, improves access to the Redondo Beach Transit Center and South Bay Galleria

100% of Springfest survey respondents support this recommendation

FY25-26 (Plan Year 3): increase Sunday service levels so that they match Saturday service levels, meaning that Sunday service would now operate around every 40 minutes from 8am-9pm.

- WHY? Post-pandemic weekend ridership on Line 102 has exceeded pre-pandemic ridership levels

77% of survey respondents support a later end time for the Line 102 on Sundays



Line 109 Recommendations

FY23-24 (Plan Year 1): re-route Line 109 around Manhattan Village Mall and Plaza El Segundo.

- WHY? Currently very low passenger activity at these stops, provides more direct service, reduces travel time, current stops are not pedestrian-friendly

FY24-25 (Plan Year 2): adjust routing around LAX to serve the Airport Metro Connector Station.

- WHY? Provides a direct connection to LAX APM and other transit operators at the AMC.

FY24-25 (Plan Year 2): terminate Line 109 at the Pier and extend Line 102 south from the Pier to Riviera Village.

- WHY? Enables easier transfers, provides easier access to the Pier and Veterans Park Senior Center, reflects travel patterns in South Redondo.

FY26-27 (Plan Year 4): improve weekday AM and PM peak hour service to every 35 minutes.

- WHY? Provide a better experience for riders who use Line 109 during peak hours.

100% of Springfest survey respondents support this recommendation

92% of Springfest survey respondents support this recommendation.

100% of Springfest survey respondents support this recommendation

75% of survey respondents would ride more often if the bus ran more frequently

Manhattan Beach Blvd. Link

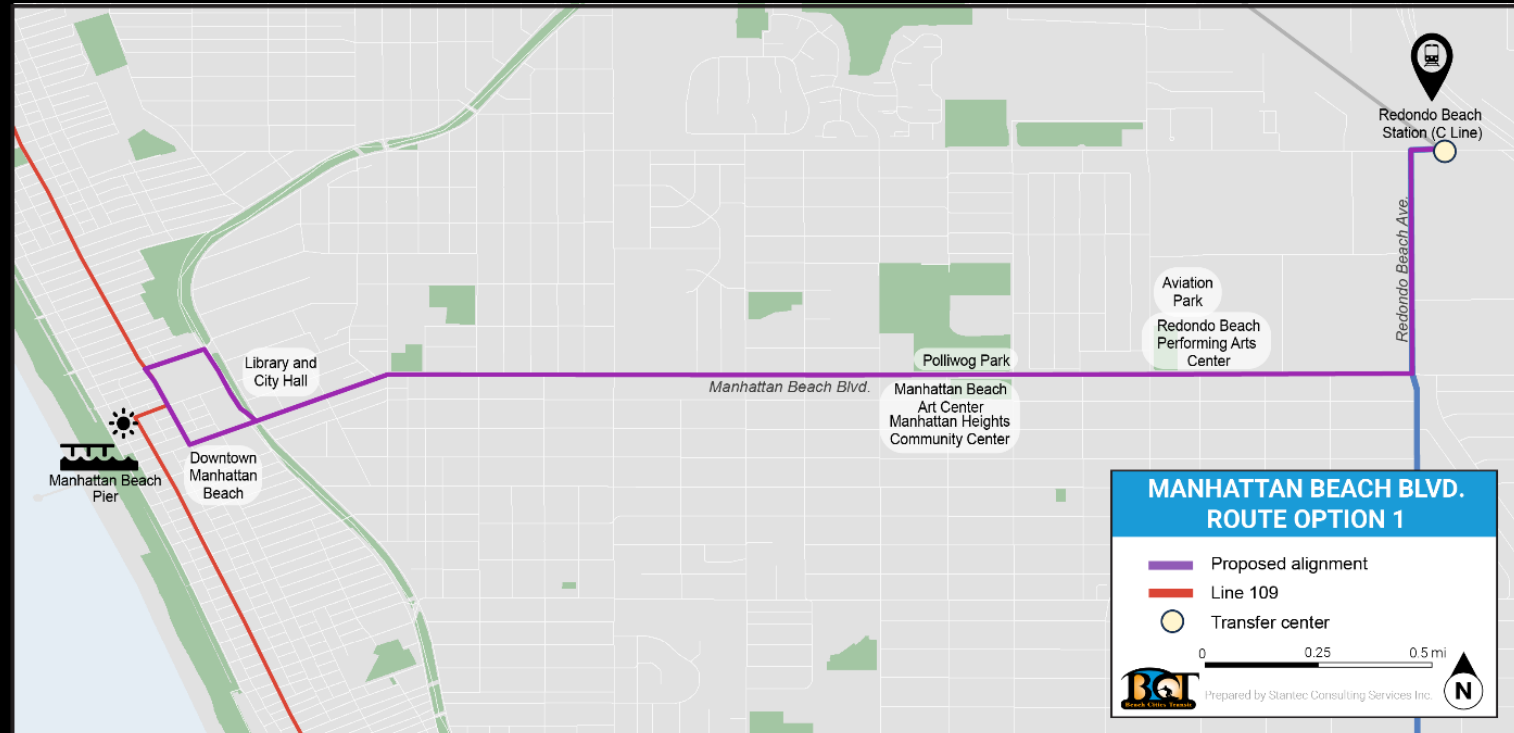
- Metro discontinuation of Line 126 along Manhattan Beach Blvd.
 - Only operated during AM and PM peak periods; low ridership
- Service along Manhattan Beach Blvd. was highly requested in the survey and at outreach events
- Manhattan Beach Mobility Plan displayed a need for east-west service along Manhattan Beach Blvd.
- Pursue operations funding from Manhattan Beach
- Launch as pilot during summer FY25-26, pending Manhattan Beach funding

Service Schedule (summer/non-school months):

- **Monday-Thursday:** 8am-8pm, every 30 minutes
- **Friday-Sunday:** 10am-11pm, every 30 minutes

Recommended alignment chosen because:

- Provides an east-west link in BCT service
- Enables more regional travel: connection to C Line
- Provides access to multiple major trip generators
- Opportunity to launch service as a pilot during summer (non-school) months to minimize operational and financial burden to BCT



WAVE Recommendations

Focus on opportunities to grow ridership and awareness

- Outreach and Engagement
 - Marketing and Engagement Plan
 - Leverage organizational partnerships
 - Travel training
 - Promote group trips/social outings
- Technology Improvements
 - New scheduling and dispatching software
 - Opportunities to book trips in different ways (website, app)
 - Enable WAVE vehicles to take TAP cards
- Long-Term
 - Explore opportunities to open up service to general public

71% of WAVE rider survey respondents use WAVE once a month or less. These opportunities can improve the rider experience and encourage them to use the service more frequently.

WAVE rider survey respondents would ride more often with technology improvements:
Track trip on an app (**27%**)
Use an app or website to book trips (**27%**)

Service Plan Summary



Re-route Line 109 to serve the LAX Automated People Mover and Airport Metro Connector Station in 2025

WHY? Provide direct connection to LAX and other transit services at the new Connector Station

Straighten Line 109 along Rosecrans and Sepulveda around Manhattan Village Mall

WHY? Addresses rider requests for more direct service, straighter lines mean that travel times will be shorter to reach LAX, few riders use stops on these segments. Line 109 still provides access to The Pointe, Plaza El Segundo, and businesses along Rosecrans Ave

Consider new summer bus service along Manhattan Beach Blvd, between the Redondo Beach C Line Station and the Manhattan Beach Pier

WHY? Fills in gap after Metro discontinued Line 126, addresses requests from the public to provide service along Manhattan Beach Blvd, serves destinations like Polliwog Park, Performing Arts Center, and other recreation areas on Manhattan Beach Blvd

Extend Line 102 south from the Redondo Beach Pier to Riviera Village and re-route Line 109 to terminate at the Pier

WHY? Creates a new transfer hub at the Pier, enabling easier transfers between 102 and 109 and Torrance Transit, provides easier access to the Pier and Veterans Park Senior Center from Line 109, creates one-seat ride for South Redondo students, and improves access to the newly opened Redondo Beach Transit Center and South Bay Galleria.

Maintain the Dial-A-Ride services for Redondo Beach and Hermosa Beach with increased marketing and awareness (travel training) programs

WHY? There were no substantial comments about the Dial-A-Ride. The curb to curb system adequately services the cities.

Service Plan Summary

Plan Year	Year 1	Year 2	Year 3	Year 4	Year 5
FY	23-24	24-25	25-26	26-27	27-28
Line 102	Routing changes to absorb the portion of Line 109 between Redondo Beach Pier and Riviera Village (January 2024). Weekday service around every 33 minutes.	N/A	Alter Sunday service schedule to match the Saturday service schedule.	N/A	N/A
Line 109	Routing changes to straighten out alignment around Plaza El Segundo and Manhattan Village Mall, and terminate line at Redondo Beach Pier (January 2024).	Implement routing changes to serve the Airport Metro Connector and Automated People Mover at LAX.	N/A	Implement 35-min weekday service during AM and PM peaks.	N/A
Manhattan Beach Blvd. Link	Lead time for additional planning, outreach, etc.		Launch new line during summer months, when school trippers are not in service.	Continue to monitor performance and adjust schedules as necessary, begin to collect data to determine whether this service should be expanded year-round	
The WAVE	Various strategies to increase ridership among senior and disabled populations.				

Service Plan Feedback (Springfest)

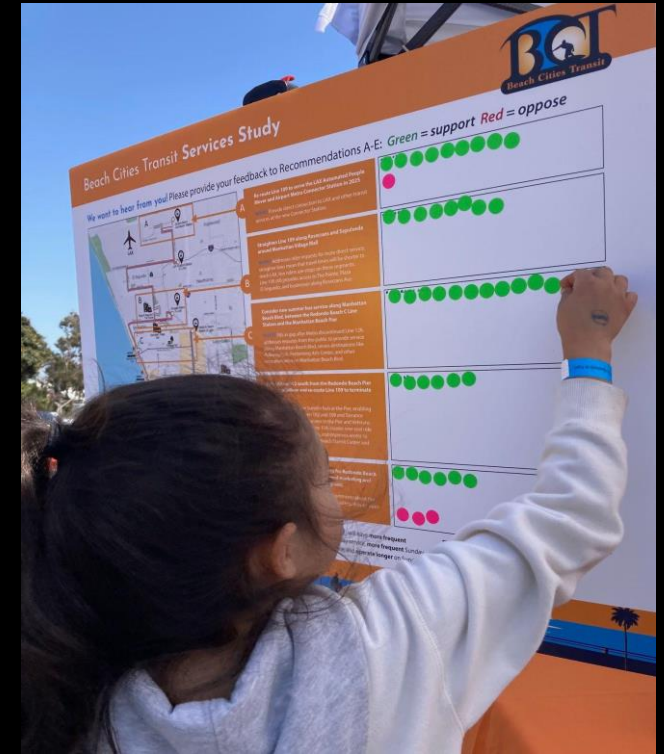
Recommendation A: re-route Line 109 to serve the LAX Automated People Mover and Airport Metro Connector Station in 2025. **92% of responses support this recommendation.**

Recommendation B: straighten Line 109 along Rosecrans and Sepulveda around Manhattan Village Mall, to address rider requests for more direct service and a quicker travel time to LAX. **100% of respondents at Springfest support this recommendation.**

Recommendation C: consider new summer bus service along Manhattan Beach Blvd., between the Redondo Beach C Line Station and Manhattan Beach Pier. **100% of respondents support this recommendation.**

Recommendation D: extend Line 102 south from Redondo Beach Pier to Riviera Village and re-route Line 109 to terminate at the Pier. **100% of respondents at Springfest support this recommendation.**

Recommendation E: maintain the WAVE DAR services for Redondo Beach and Hermosa Beach with increased marketing and awareness (travel training) programs. **59% of respondents support this recommendation.**



Innovative Clean Transit Mandate

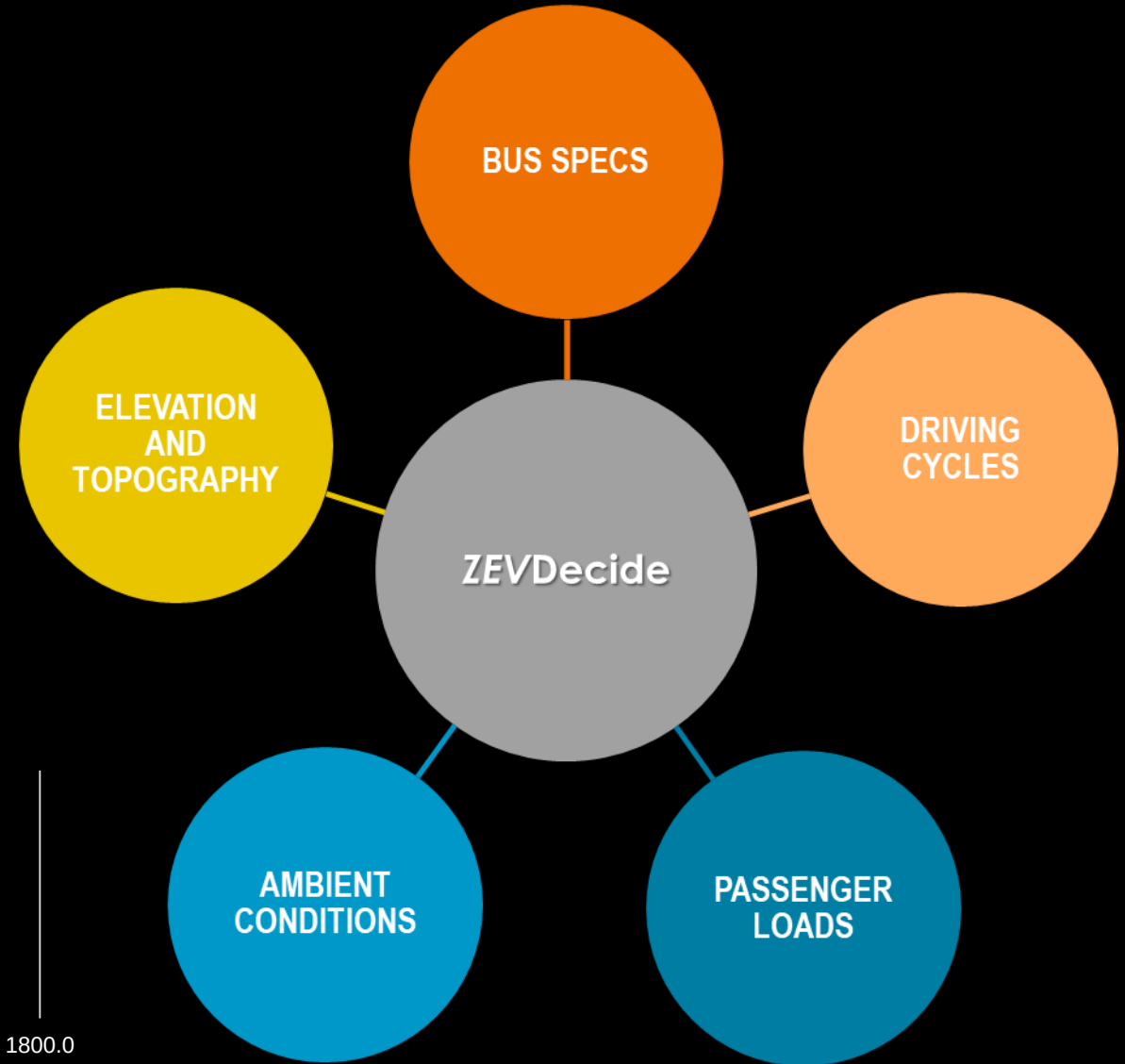
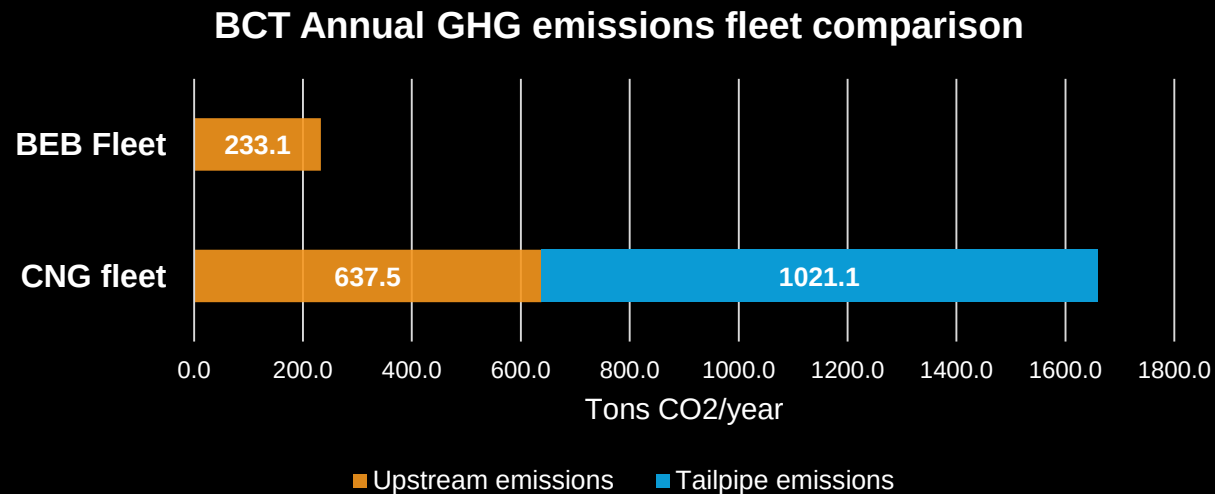
Zero Emission Bus Plan

- Requires that small transit agencies begin **purchasing ZEBs in 2026, with a goal of 100% transition by 2040**
- Requires that small transit agencies submit a Council-approved plan by **June 30, 2023**
- Exempts cutaways, motorcoaches and articulated bus until 2026 (and later if no Altoona tested vehicles are available)
- Provides exemptions for agencies based on lack of feasible vehicle alternatives, challenging terrain, operating profiles that aren't feasible with ZE alternatives, and other challenges
- **Project Purpose:**
 - To develop a CARB-compliant zero-emission rollout plan in response to the ICT Regulation
 - To develop a transition plan and strategy for BCT's goal of a 100% ZE fleet



ZEB Planning Process

- ZEVDecide: predictive power and energy modeling
- Shows BCT's service can largely be transitioned to BEBs in a 1:1 manner
- Transitioning to a BEB fleet will reduce BCT's GHG footprint by **87%**



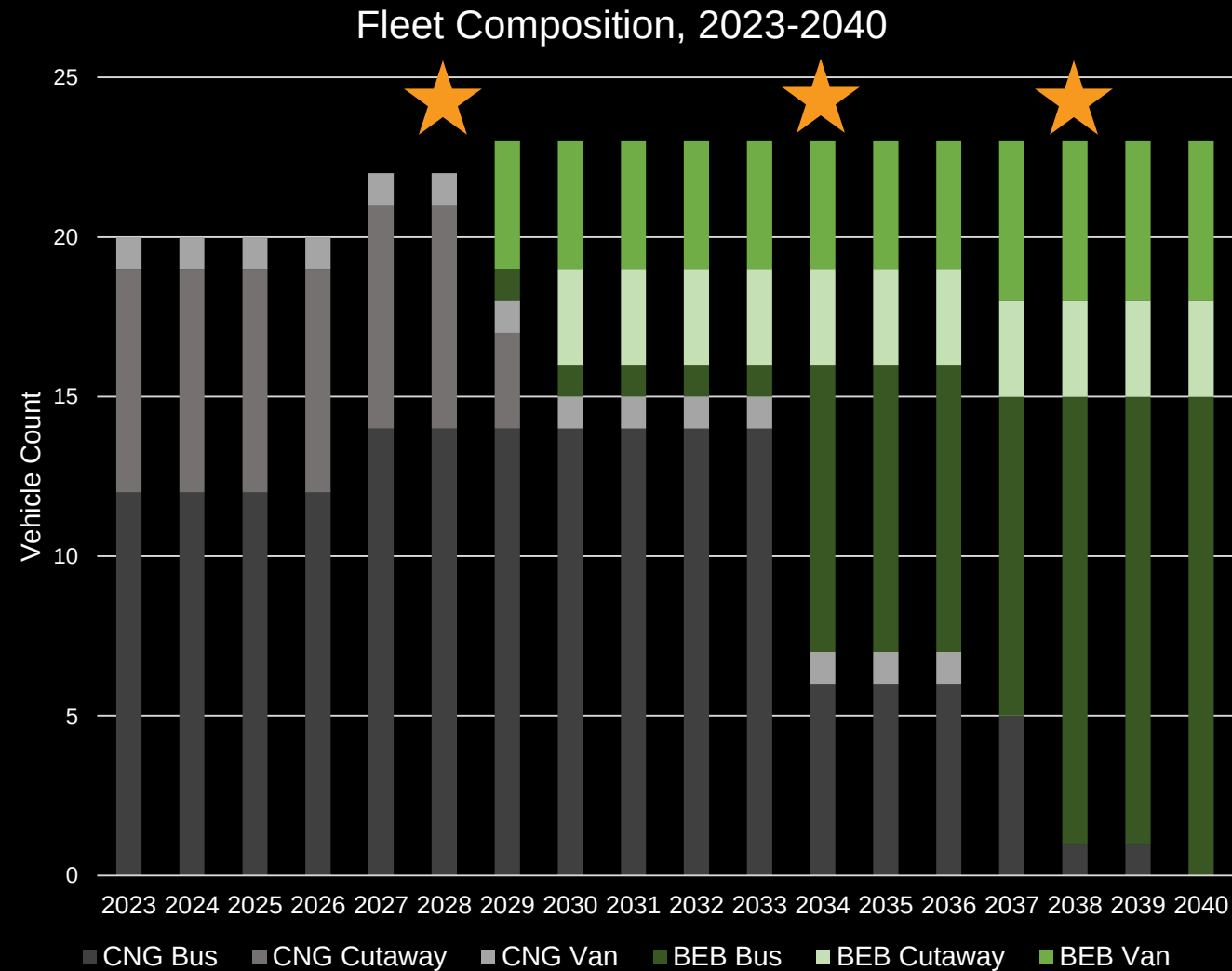
ZEB Technology Choice

Recommendation: Deploy **Battery-Electric Buses**

- BCT has shorter distance routes, traveling approximately 170 miles per day
- Fixed route buses travel 20-179 daily miles and WAVE vehicles travel 64 daily miles
- BCT ridership does not support the need for larger buses (40' or 60')
- There are more shorter length BEB options available in the market
- Most of BCT's operations can be converted to BEBs in a 1:1 manner

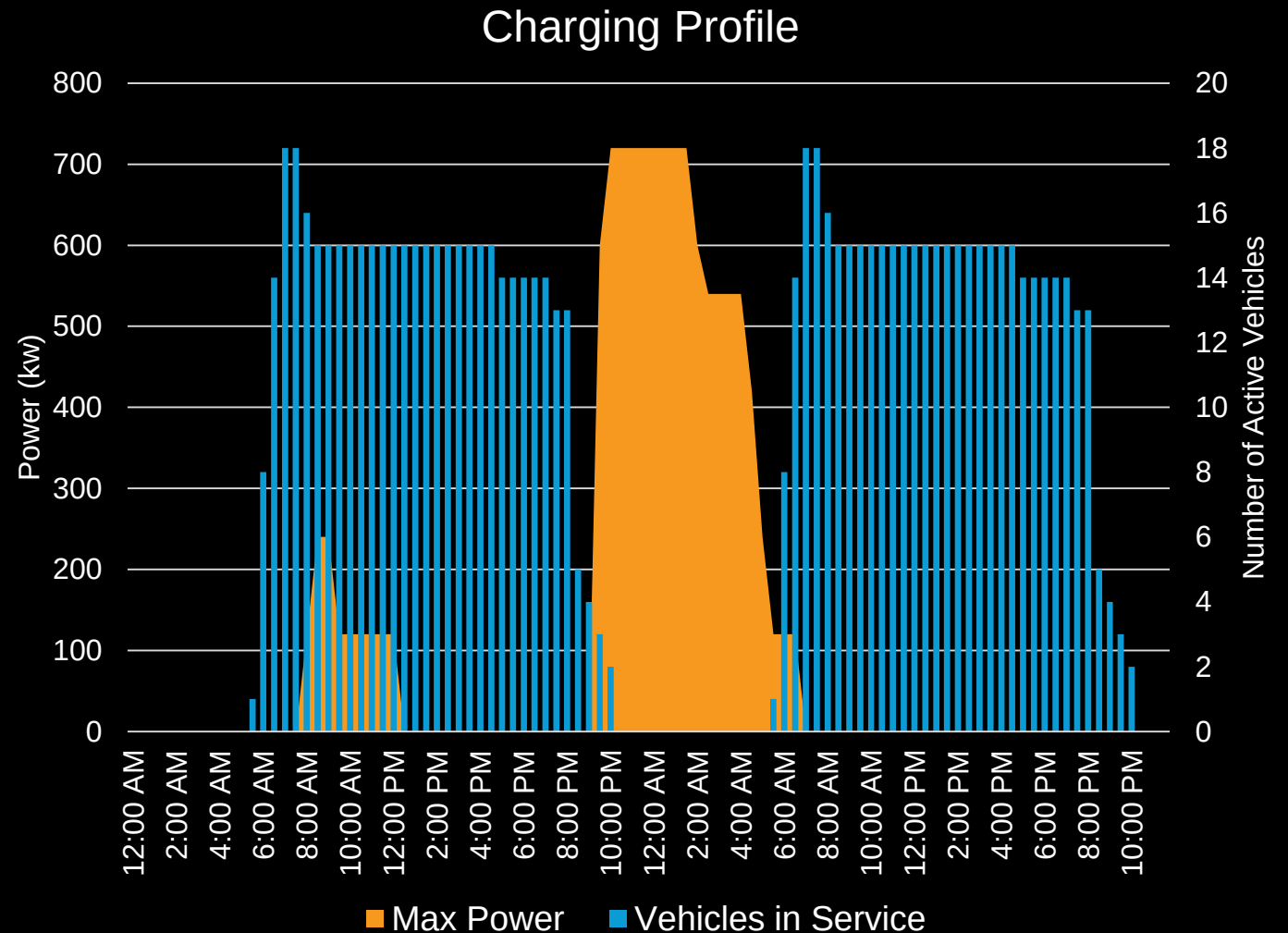
Fleet Replacement Plan and Infrastructure Phasing

- First BEB purchase in **2029** in accordance with CARB purchase requirements
- Slight fleet growth to accommodate service plan and take a more conservative approach to ZEB deployment
- WAVE fleet transitions to more vans (5) and fewer cutaways (3) to right-size fleet
- All the major electrical equipment, modifications, utility upgrades, and conduit should be incorporated during the construction of the new facility in FY2028 so that the physical installation of the chargers and dispensers can be a simple connection to the already installed infrastructure. Each charger can be connected 6-8 months before new electric vehicles arrival.



Power Demand and Charging Profile

- Charging requirements for fixed route and WAVE services
- In-depot overnight charging
- Avoids charging between 4pm and 9pm to avoid peak hour charges from SCE
- Requires a maximum power capacity of ~700 kW seen during the overnight fueling window

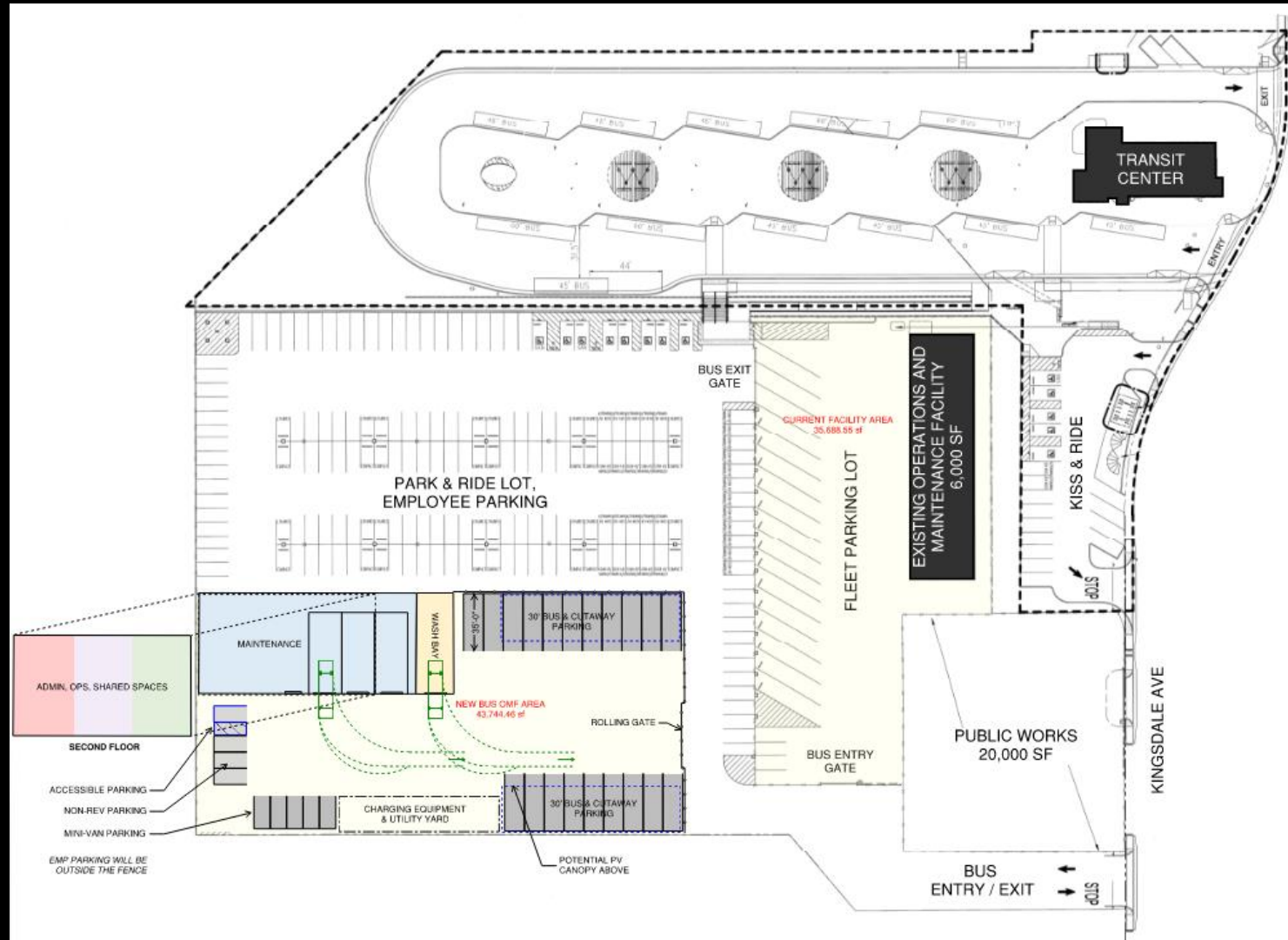


Infrastructure and Facility Needs

- Existing operations and maintenance building and bus parking area is too small and in need of replacement to sustain BCT's operations
- Current facility is about 6,000 sq. ft. undersized for current operations

Area	Proposed Area (sq. ft.)	Notes
Buildings Total	16,264	Summation of space needed for proposed building areas (maintenance, operations, administration, wash bays, shared spaces, building utilities)
Fleet and Non-Revenue Vehicle Parking	16,555	Summation of revenue and non-revenue parking quantity (26); parking area plus 50% grossing factor for circulation aisles, etc.
Employee Parking	16,695	Summation of employee and visitor parking quantity (56); parking area plus 50% grossing factor for circulation aisles, etc.
Misc. Exterior Spaces	4,135	Estimated area includes space for future expansion
Grand Total	~54,000	= ~1.23 acres

Operations and Maintenance Facility Site Plan



- BCT will require significant modifications to its facilities to accommodate the transition to BEBs and sustain long-term operations
- New operations and maintenance facility
- New BEB charging equipment and electrical utility improvements

Facility construction: 2027-2029

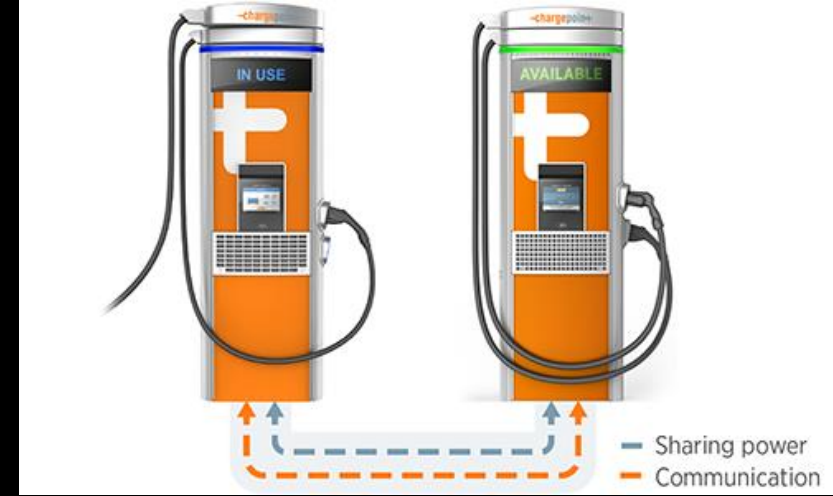
Charger installation: 2029

First vehicle delivery: 2030 (with procurement in 2029)

ZEB Infrastructure and Bus Yard

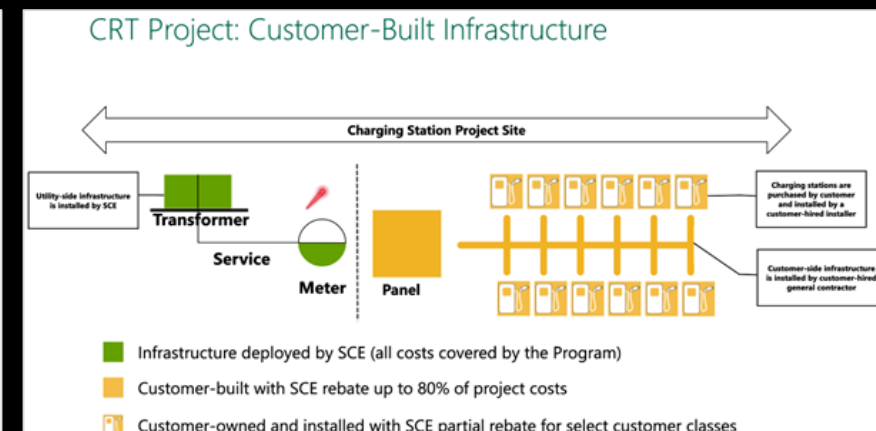
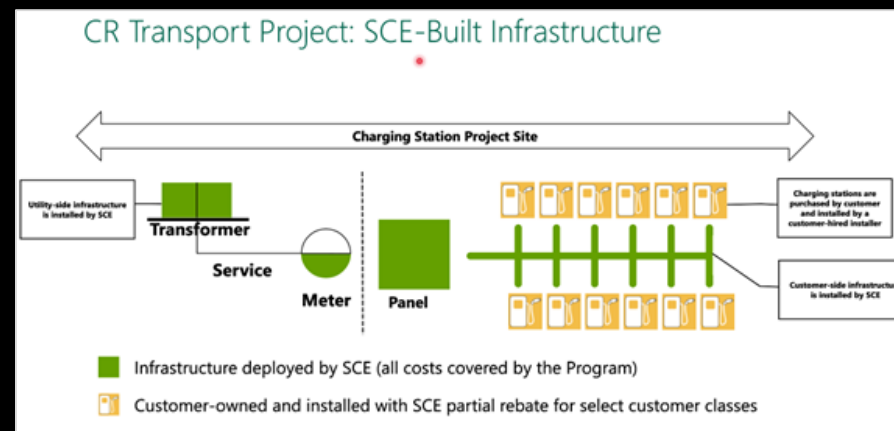


Example a BEB plugged into a charger



Example of ground-mounted dispensers

- Electrical utility upgrades through SCE
- Potential participation in SCE Charge Ready Transport Program for infrastructure installation



Future Planning and Design Needs

Facility Design and Permitting Needs

2024: CEQA and NEPA clearances

2026: Architectural and Engineering (A&E) services

2027: Construction Management (CM) services

2028: Commence facility construction

2030: Facility construction complete in time for first BEB



Operating Cost Estimates for Service Plan

- Assumes BCT will continue to utilize a contractor for operations and maintenance of fixed route and WAVE services
- City will issue a new RFP for service for a new contract period to begin July 2026 (Plan Year 4). After that, it is anticipated that costs and associated wages will be higher subject to the RFP process
- 32% increase in costs and 23% increase in service between Plan Year 1 and Plan Year 5

Plan Year	Year 1	Year 2	Year 3	Year 4	Year 5
FY	23-24	24-25	25-26	26-27	27-28
Fixed Monthly Rate	\$103,502	\$108,574	\$114,002	\$121,982	\$130,521
Fixed Hourly Rate	\$48.57	\$50.95	\$53.50	\$57.24	\$61.25
Annual Revenue Hours	47,186	47,186	49,560	50,319	50,319
Total Operating Cost	\$3,533,848	\$3,707,007	\$4,019,3660	\$4,344,162	\$4,648,253

Capital Cost Estimates: Bus Procurements and Facility and Infrastructure Upgrades

Site Costs	
Site Demolition	\$450,351
Park & Ride Lot/Employee Parking	\$604,309
OMF Sitework	\$8,153,797
Admin-Ops & Maintenance Facility	\$9,139,965
Escalation	\$3,957,755
Equipment Costs	
Maintenance/Bus Wash Equipment	\$1,000,000
Escalation	\$423,843
Soft Costs	
Architectural/Engineering Fees	\$3,559,503
Environmental Consulting (CEQA/NEPA)	\$177,975
Construction Contingency	\$1,186,501
Construction Management	\$1,898,402
Surveys, etc.	\$1,186,501
Total Opinion of Probable Cost with Escalation, Equipment, and Soft Costs	\$31,738,902

Year (FY)	Bus Procurements	Estimated Cost (2023\$)
23-24	1 CNG Bus	\$533,000
24-25	3 CNG Buses	\$1,632,000
26-27	2 CNG Buses	\$1,135,000
27-28	1 CNG Van	\$63,300
28-29	1 BE Bus 4 BE Vans	\$1,872,000
29-30	3 BE Cutaways	\$870,700
33-34	8 BE Buses	\$8,442,800
36-37	1 BE Bus 1 BE Van	\$1,371,600
37-38	4 BE Buses 4 BE Vans	\$5,588,800
38-39	3 BE Cutaways	\$1,023,500
39-40	1 BE Bus	\$1,178,400

Potential Funding Sources

Federal

- Low or No Emission Vehicle Program (5339c)
- Grants for Bus and Bus Facilities (5339a; 5339b)
- RAISE Discretionary Grants
- Congestion Mitigation and Air Quality (CMAQ)
- Urbanized Area Formula Grants (5307)
- Other federal opportunities (like IIJA, etc.)

State/Local

- Local Transportation Fund (LTF)
- Hybrid and Zero-Emission Truck and Bus Voucher Incentive Project (HVIP)
- Low Carbon Transit Operations Program (LCTOP)
- Transit and Intercity Rail Capital Program (TIRCP)
- California State of Good Repair (SGR)
- Volkswagen Environmental Mitigation Trust
- Low Carbon Fuel Standard (LCFS) credits
- SCE Charge Ready Transport Program
- SBCCOG Subregional Measure R Funding

Summary

- **Service Plan:** guide investments and changes to BCT service for the 5-year service planning period
 - Focus on preparing BCT services for upcoming transportation projects and developments in the South Bay
- **ZEB Plan:** develop a CARB-compliant ZEB Plan to help BCT transition to a 100% ZEB fleet by 2040
- **Infrastructure and Facility Needs:** identify infrastructure and facility needs for ZEB transition and ongoing BCT operations
 - Identify capital planning needs for BCT to implement service plan, ZEB plan, and infrastructure planning
 - Timeline ensures facility and infrastructure will be in place for first BEB to arrive in 2030



Recommendation:

- **Discuss and Provide Input on the Draft BCT Transit Services Study**

