

ATTACHMENT 2



December 14, 2017

To: Transit Committee

From: Darrell Johnson, Chief Executive Officer

A handwritten signature in blue ink, appearing to read "Darrell Johnson", is positioned to the right of the "From:" field.

Subject: Central Harbor Boulevard Transit Corridor Study

Overview

In August 2015, the Orange County Transportation Authority initiated the Central Harbor Boulevard Transit Corridor Study to analyze transit options in the Harbor Boulevard corridor. The study scope was amended in October 2016 to also evaluate transit connections between the Anaheim Resort and the Anaheim Regional Transportation Intermodal Center. In February 2017, 12 draft conceptual alternatives were presented for review and comment, and this update presents the results of the conceptual alternatives analysis.

Recommendations

- A. Direct staff to offer presentations of the study results to the city councils in the study area, and return to the Board of Directors with a status report when completed.
- B. Direct staff to continue to work with technical staff from each of the corridor cities and the California Department of Transportation to identify key issues that would need to be addressed during any subsequent study efforts.

Background

Harbor Boulevard is one of the Orange County Transportation Authority's (OCTA) most productive transit corridors with eight percent of the countywide daily bus boardings. While OCTA operates a high frequency of service in the study area, much more could be done to improve the quality, convenience, and visibility of the service for residents, employees, and tourists alike. The study area is characterized by some of the highest population and employment densities in the county. Moreover, the Anaheim Resort is home to the county's largest employer (Disneyland), and is an international tourist destination that attracts 27 million annual visitors. Despite the large number of

daily visitors, existing OCTA bus routes serve a relatively small number of these trips. In addition, the Anaheim Transit Network system shuttles visitors and some employees between parking structures, hotels, and major attractions in the Anaheim Resort area. OCTA currently provides high frequency Bravo! service in the corridor with high ridership. Increasing transit ridership further requires more transit capacity and better travel times.

The Central Harbor Boulevard Transit Corridor Study (Harbor Study) evaluates 12 conceptual transit alternatives that include a variety of alignment, mode, and feature options in order to identify the concepts that offer the most significant transportation benefits and also receive the widest community support. The draft alternatives were presented to the OCTA Board of Directors (Board) in February 2017. The modes evaluated include enhanced bus, bus rapid transit (BRT), streetcar, and rapid streetcar. These transit modes cover a range of implementation costs and ridership levels.

For example, bus and BRT options would provide operational flexibility and lower implementation costs, while the streetcar options would attract more riders due to improved quality and comfort. Two study objectives were to estimate the ridership for these modes within the study area, and to estimate the travel time improvements that could be achieved by various modes and features. The rapid streetcar and BRT options would operate in a dedicated transit lane for at least 50 percent of the alignment.

The project development team included representatives from OCTA, the California Department of Transportation, and technical staff from each of the corridor cities (Anaheim, Fullerton, Garden Grove, and Santa Ana). Over the past two years, the team analyzed the study corridor and identified mobility needs, established evaluation criteria, developed 12 conceptual alternatives, and conducted two rounds of outreach to solicit feedback from the public and stakeholders.

Discussion

The summary of evaluation results are presented in two parts: (1) the performance evaluation and (2) city and community input. An executive summary (Attachment A) and maps of the alignments (Attachment B) are included in the attachments.

For the performance evaluation, a set of 24 evaluation criteria (Attachment C) was used to determine how each alternative performed in terms of ridership, cost-effectiveness, travel-time improvement, and ability to reduce vehicle miles traveled (VMT). The evaluation criteria was based on well defined and accepted planning practice. The performance metrics also indicated how well the conceptual alternatives were supported by local land uses, as well as how many physical constraints or land-use impacts there might be.

The planning-level benefits and impacts of the alternatives were evaluated for a future year (2035) and compared to a 2035 baseline scenario in which no capital or service improvements were made to the corridor. Any benefits that were measured above and beyond the baseline are considered the net benefits that result from project implementation. Planning-level cost estimates were developed for each alternative. These included both the capital costs needed to implement the project and the estimated increase to annual operating and maintenance costs. The cost estimates were used to evaluate cost-effectiveness for each alternative.

Below are the total scores for each conceptual alternative, ranked from highest to lowest.

Overall Performance Scores Based on 24 Evaluation Criteria

Alternative	Length (Miles)	Performance Score
H3: Harbor Rapid Streetcar ¹	8.0	74
H2: Harbor Long Streetcar	8.0	73
H5: Harbor Bus Rapid Transit ^{1*}	12.0	73
L1: Anaheim-Lemon Streetcar	8.5	68
L4: Anaheim-Lemon Bus Rapid Transit ^{1*}	12.5	66
L2: Anaheim-Lemon Rapid Streetcar ¹	8.5	65
K1: Harbor-Katella Streetcar	5.9	65
H1: Harbor Short Streetcar	3.4	64
K2: Katella + Anaheim-Lemon Enhanced Bus	10.5	57
L3: Anaheim-Lemon Enhanced Bus*	12.5	56
K3: Katella + Harbor Hybrid	10.5	56
H4: Harbor Enhanced Bus*	12.0	55

¹ Operates in a dedicated transit lane for approximately 50 percent of the alignment.

* Extends to MacArthur Boulevard, consistent with existing Bravo! Route 543 service area.

The three highest scoring projects all included Harbor Boulevard alignments, which provided direct connections between Harbor/Westminster (future terminus of the OC Streetcar), and the Fullerton Transportation Center (FTC). The next three highest scoring projects included Anaheim-Lemon alignments, which also made direct connections between Harbor/Westminster and the FTC. Ability to attract ridership was the most important factor in determining how well an alternative performed because ridership was considered in multiple criteria.

Ridership

In terms of ridership, the top performing alternatives included rapid streetcar, streetcar, and BRT alternatives that connected Harbor/Westminster and the FTC via Harbor Boulevard or Anaheim-Lemon. Ridership for the top performing alternatives is listed below.

Alternatives with Highest Estimated Ridership
(See Attachment D for a complete list)

Alternative	Average Weekday Boardings	Per-Mile Boardings
H3: Harbor Rapid Streetcar ¹	15,200	1,900
H2: Harbor Long Streetcar	14,700	1,800
H5: Harbor Bus Rapid Transit ^{1*}	14,600	1,200
L2: Anaheim-Lemon Rapid Streetcar ¹	12,500	1,500
L4: Anaheim-Lemon Bus Rapid Transit ^{1*}	12,000	1,000
L1: Anaheim-Lemon Streetcar	11,300	1,300

¹ Operates in a dedicated transit lane for approximately 50 percent of the alignment.

* Extends to MacArthur Boulevard, consistent with existing Bravo! Route 543 service area.

The Harbor-Katella streetcar alignment, which connected Harbor/Westminster with the Anaheim Regional Transportation Intermodal Center via Disney Way, had an estimated 5,500 average weekday boardings, approximately 900 boardings per mile of service. This was comparatively lower than the other streetcar projects that operated on Harbor Boulevard or Anaheim-Lemon and connected to the FTC. The Ridership Summary Table (Attachment D) provides the ridership estimates for all alternatives.

Comparing the per-mile boardings by mode and alignment, the Harbor Boulevard alignments had the highest estimated per-mile boardings for both the bus rapid transit and the streetcar modes. The Anaheim-Lemon alignments had the next highest per-mile boardings for these modes. The enhanced bus alternatives averaged between 430 and 470 boardings per-mile.

Per-Mile Boardings by Mode and Alignment

Alignment	Enhanced Bus	BRT	Streetcar	Rapid Streetcar
Harbor to FTC	430	1,200	1,800	1,900
Anaheim-Lemon	430	1,000	1,300	1,500
Harbor to Katella	470	n/a	900	n/a

n/a – not applicable

Travel Time Improvement:

Travel time improvement was measured two ways: by estimating average decrease in travel time for trips taken between common destinations, and by estimating the improvement to the 2035 average operating speeds. For the best performing alternatives, the average decrease in travel time for trips to/from common destinations ranged from nine to 17 percent, compared to the 2035 baseline scenario:

- H5 Harbor BRT (16.7 percent),
- H3 Harbor Rapid Streetcar (15.1 percent),
- L4 Anaheim-Lemon BRT (12.8 percent),
- H4 Harbor Enhanced Bus (12.0 percent),
- H2 Harbor Long Streetcar (8.9 percent),
- L2 Anaheim-Lemon Rapid Streetcar (8.8 percent).

The other travel time improvement measure estimated the percentage improvement in 2035 average operating speeds (in miles per hour {mph}) compared to the 2035 no-build scenario. Below are the estimated changes in average operating speeds for the four long Harbor alternatives. Although the Harbor alignments performed slightly better than other alignments, the average operating speeds are indicative of those for each mode:

- H4 Harbor enhanced bus: improved from 14.9 to 16.4 mph (ten percent),
- H5 Harbor BRT: improved from 14.9 to 17.5 mph (17 percent),
- H2 Harbor long streetcar: improved from 10.4 to 13.2 mph (27 percent),
- H3 Harbor rapid streetcar: improved from 10.4 to 14.2 mph (36 percent).

While the change in mph may seem nominal at first glance, improvement in average operating speeds has significant implications for transit operating costs. A ten percent improvement in average operating speeds, for example, represents a ten percent decrease in the costs of operating that service.

Cost-Effectiveness

Cost-effectiveness was evaluated using four measures: (1) annual project cost per annual linked trip on the project, (2) annual project cost per new linked trip on the system, (3) farebox recovery ratio, and (4) financial feasibility. The Cost and Cost-Effectiveness Table (Attachment E) includes the cost information for each alternative, as well as the annual cost per annual linked trip on the project.

The BRT alternatives (which operated on Harbor and Anaheim-Lemon) achieved the highest overall cost-effectiveness ratings. They had the best combined cost-ratios for “cost per annual linked trips on project” and “cost per annual new system trips.” They also ranked among the top in farebox recovery and received high financial feasibility scores. The Harbor Rapid Streetcar, Anaheim-Lemon Enhanced Bus, and Katella + Anaheim-Lemon Enhanced Bus scored the next best for overall cost-effectiveness.

The Harbor BRT and Harbor Rapid Streetcar tied for the highest farebox recovery ratio (31 percent); followed by the Harbor Streetcar (30 percent), and the Anaheim-Lemon BRT (29 percent).

Land Use

For the land-use evaluation, population and employment densities, transit supportive land-use plans and zoning, percentage of affordable housing, economic development potential, reduced daily VMT, and physical constraints were all analyzed. While population and employment densities were fairly similar for all alternatives, the measures with the most significant differences were the reduced daily VMT and the physical constraints. The top performing alternatives for this measure reduced daily VMT by an estimated 102,000 to 104,000, compared to the No-Build scenario. While the short streetcar alignments (H1 and K1) generated much smaller daily VMT reductions due to the shorter alignments, they registered the best scores for physical constraints and potential land-use impacts. At the other end of the spectrum, the long streetcar alternatives on Harbor and Anaheim-Lemon had the highest estimated daily VMT reductions, but also encountered the most physical constraints. While most of the alternatives received similar scores overall, the Harbor BRT and Harbor Rapid Streetcar scored about a point higher than the rest of the field in this category.

Performance Evaluation Conclusion

Based on the performance evaluation there are five conceptual alternatives that have the potential to perform well, provide significant ridership benefits, and rate competitively against the Federal Transit Administration New Starts evaluation criteria. For the purposes of any further evaluation and analysis it is recommended that focus be narrowed to the following five alternatives:

- H3 Harbor Rapid Streetcar: from Harbor/Westminster to FTC,
- H2 Harbor Long Streetcar: from Harbor/Westminster to FTC,
- H5 Harbor BRT: from Harbor/MacArthur to FTC,
- L1 Anaheim-Lemon Streetcar: from Harbor/Westminster to FTC via Anaheim-Lemon,
- L4 Anaheim-Lemon BRT: from Harbor/MacArthur to FTC via Anaheim-Lemon.

City Input and Key Issues

Some of the key issues identified by the cities that would require additional analysis in the next study phase or would need to be addressed prior to more study include:

- Dedicated transit lanes - a thorough analysis of the benefits and impacts of dedicated transit lanes, as well as identification of performance measures for evaluating appropriate locations, is needed before city staff can consider these.
- Master Plan of Arterials and Highways (MPAH) Guidelines - the path and process for amending the MPAH plan to allow for a change in transit corridor status will need to be outlined and made available to city staff considering any changes to existing traffic operations.
- Center-running alignments with center stations - there is little support among the jurisdictions for center-running alignments with center stations due to the likelihood that this configuration would require additional right-of-way and reconfiguration of left-turn pockets to accommodate the stations.
- Harbor Boulevard constraints - a portion of Harbor Boulevard in northern Anaheim has not been built out to the full capacity and is limited to four traffic lanes in width. This is a potential physical constraint which must be considered with various improvement strategies. Because of the close proximity of the residences, this is also an area of increased community sensitivity sites must also be taken into consideration. For these reasons, further evaluation of both the Harbor and Anaheim-Lemon alignments is recommended.
- Underlying changes to bus service south of Westminster Avenue - with the implementation of some streetcar and bus alternatives a corresponding reduction in bus service frequencies on Harbor Boulevard south of Westminster Avenue is assumed. Staff from the City of Santa Ana (City) have indicated that this would be an issue of concern for the City.
- Evaluation of the streetcar mode option - the Anaheim City Council adopted a resolution in January 2017 stating opposition to a streetcar system in the City of Anaheim. Among the reasons stated in the resolution were concerns over the expense of a streetcar system, disruptions to traffic and potential added congestion, and lack of flexibility of the system. The City of Anaheim accounts for a considerable part of the project study area, and all 12 of the study alternatives travel into or through the city.

An important next step will be identifying the specific strategies and concepts that each city council is open to evaluating. The final round of outreach will take place after the January 2018 Board update and provide another opportunity to receive input from each city.

Community Input

The Public Outreach Summary Report (Attachment F {full report with appendices is available at www.octa.net/harbordocuments}) provides a summary of the public and stakeholder input that was received during the course of the study via four public open houses, two stakeholder working group meetings, online surveys, and on-board surveys. Some of the key points of the online survey were:

- The great majority of survey respondents (92 percent) supported making improvements to transit in the Harbor corridor.
- Rapid streetcar was the preferred mode option with 24 percent support, followed by enhanced bus (20 percent), BRT (17 percent), and streetcar (13 percent).
- Respondents were evenly split in their support of bus and streetcar mode options, with 37 percent supporting the enhanced bus and BRT options and 37 percent supporting the streetcar or rapid streetcar options.
- More respondents chose mode options that included a dedicated transit lane (41 percent).
- The most popular alignment choice was Harbor Boulevard (37 percent), followed by the Anaheim-Lemon alignment (20 percent), and the Katella + Anaheim-Lemon alignment (19 percent).

Next Steps

The next steps include offering council presentations to each of the corridor cities to receive comments. The team will continue to work with the corridor cities' staff to identify key issues to be addressed in the next study phase. The Harbor Study reports will be made available on the study webpage for public review and comment. Input received from the cities, public, and stakeholders will be incorporated into the final report and help inform next steps. The feedback received will be reported back to the Board.

The top ranked alternatives have the potential to provide significant transportation benefits and compete well in state and federal funding programs. As the county transit agency, OCTA cannot move alternatives forward without support from the cities. With Board approval, OCTA staff will be presenting the study results to the local city councils and the stakeholder working group for feedback. If sufficient support develops around a few alternatives, OCTA could recommend those be advanced to the next step of the process, which would be a detailed environmental review.

However, if consensus is not developed, OCTA may need to spend additional time discussing project concerns with cities and refining alternatives to develop sufficient support. OCTA may also consider making lower cost, lower impact transit improvements in the study area which are more under OCTA's direct control.

Summary

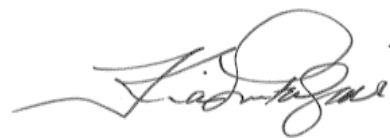
The project team has completed the conceptual alternatives evaluation for the Central Harbor Boulevard Transit Corridor Study. This report provides a summary of the performance evaluation results of the 12 draft conceptual alternatives and also provides a summary of the city and community input received to date. A final round of outreach is proposed, to present the evaluation results to each of the cities in the study area and to receive comments.

Attachments

- A. Central Harbor Boulevard Transit Corridor Study, Executive Summary, December 2017
- B. Maps of the Alignments
- C. Central Harbor Boulevard Transit Corridor Study, Evaluation Criteria
- D. Ridership Summary Table
- E. Cost and Cost-Effectiveness Table
- F. Orange County Transportation Authority, Central Harbor Boulevard Transit Corridor Study, Public Outreach Summary Report

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CENTRAL HARBOR BOULEVARD TRANSIT CORRIDOR STUDY



EXECUTIVE SUMMARY

DECEMBER 2017

Prepared by:



In association with:



FULLERTON



www.octa.net/bravo

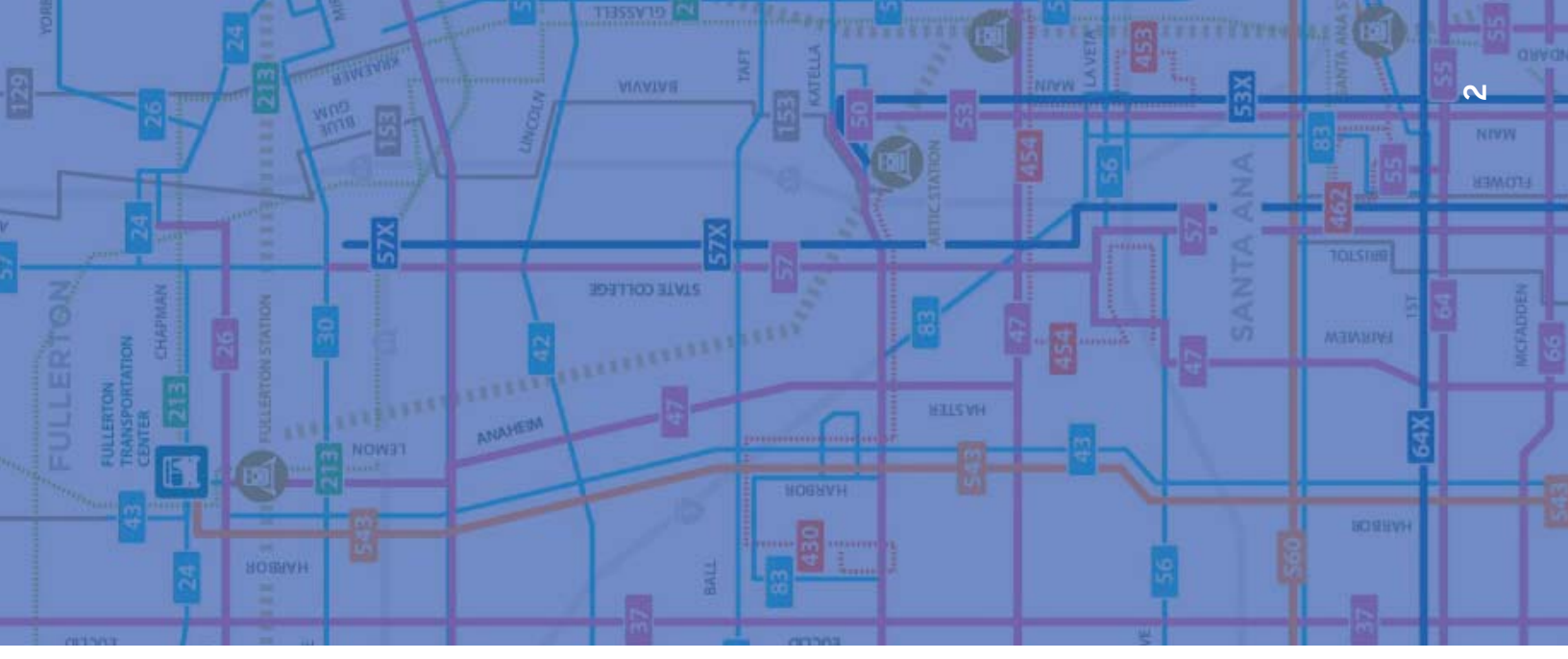
CENTRAL HARBOR BOULEVARD TRANSIT CORRIDOR STUDY
EXECUTIVE SUMMARY

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1 Background

Harbor Boulevard is Orange County's busiest north-south transit corridor. On a typical weekday, OCTA buses average more than 12,800 boardings up and down Harbor Boulevard. OCTA buses operating on the parallel Anaheim Boulevard/Lemon Street corridor collect an additional 9,200 average weekday boardings between the cities of Fullerton and Newport Beach. Additionally, buses operating along Katella Avenue collect over 4,200 boardings on an average weekday. The three corridors combined account for a significant share of OCTA's total ridership.



Harbor Boulevard

This study focuses on an eight-mile segment of Harbor Boulevard from the Fullerton Transportation Center (FTC) in Downtown Fullerton, through the cities of Anaheim and Garden Grove to Westminster Avenue, on the border of Garden Grove and the City of Santa Ana.



Anaheim Boulevard/Lemon Street

This study also considers connections along a parallel five-mile segment of Lemon Street and Anaheim Boulevard from the FTC in Downtown Fullerton to Katella Avenue in Anaheim.



Katella Avenue

An additional 2.2-mile segment of Katella Avenue, from Harbor Boulevard to the Anaheim Regional Transportation Intermodal Center (ARTIC) in Anaheim's Platinum Triangle district has also been added for consideration in this study.

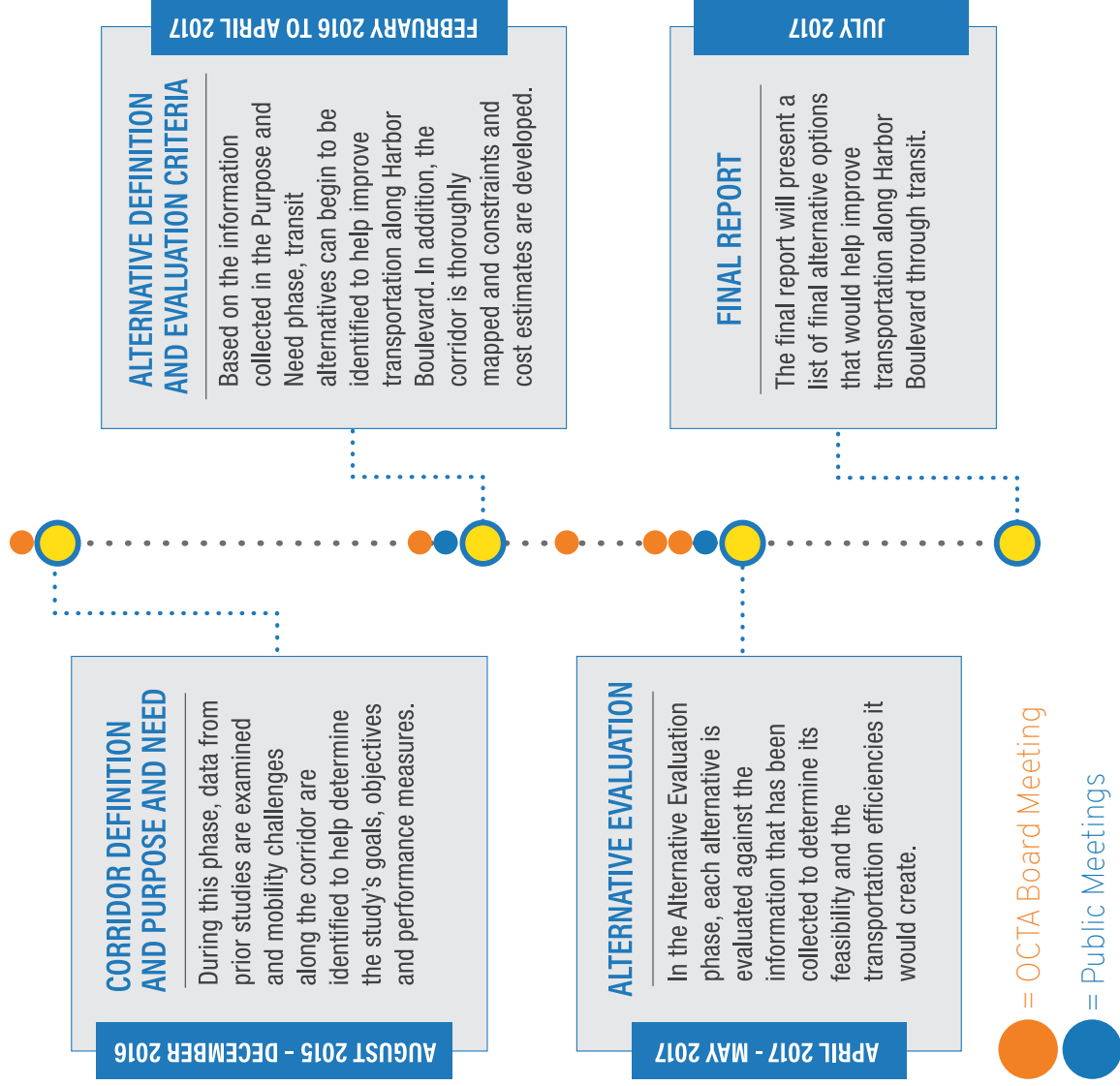


1.1 Study Goals

Since beginning the study in 2015, OCTA has worked in close coordination with the cities of Anaheim, Fullerton, Garden Grove, and Santa Ana to:

- 1. Analyze and develop strategies for improving transit along these important corridors.**
- 2. Establish goals, objectives, and evaluation criteria for evaluating transit improvements.**
- 3. Develop 12 project alternatives and evaluate each alternative against comprehensive criteria.**
- 4. Recommend next steps that serve OCTA's core mission of moving more people and supporting each corridor city's long-term plans.**

1.2 Study Timeline



In 2015, OCTA initiated the *Central Harbor Boulevard Transit Corridor Study* to analyze transit options along an eight-mile segment of Harbor Boulevard—Orange County's busiest north/south transit corridor.

The study was intended to analyze up to nine alternatives, including alignment, mode technology, stop locations, ridership/cost estimates, and feedback from stakeholders. This would allow OCTA and corridor cities to move forward and analyze a locally preferred alternative, prepare an environmental assessment, and seek further public participation during subsequent project phases.

In October 2016, the OCTA Board of Directors, per an agreement with the City of Anaheim, amended the scope of the *Central Harbor Boulevard Transit Corridor Study* to also evaluate three additional alternatives that provide connections between The Anaheim Resort® and the Anaheim Regional Transportation Intermodal Center (ARTIC).



2 Why Harbor?

2.1 Key Themes

Harbor Boulevard is an important north-south transit spine and is served by the highest-frequency bus service in the entire OCTA system.

Population densities and employment densities in the study area are double and triple the county averages.

Investments in the corridor ensure that resources are being placed where the demand is greatest.

Improvements on the corridor coincide with improvements on other major corridors such as Westminster Avenue.

Improvements also enhance connections to regional rail hubs in Fullerton, Anaheim, and Santa Ana.



2.2 Key Challenges

- 1. Performance:** Current traffic conditions limit the speed and reliability of transit service.
- 2. Land Uses:** Some land uses prioritize automobile access over transit and pedestrian options.
- 3. Connectivity:** Connections to and from major activity centers are often inconvenient and time-consuming.
- 4. Infrastructure:** The built-out nature of Harbor Boulevard means that most roads cannot be expanded to meet increased demand.
- 5. Mode Choice & User Experience:** For many trips, few modes are competitive with the automobile.
- 6. Cost:** OCTA must balance benefits with overall project costs to ensure the best use of public funds.

3 Alternatives

The study analyzes 12 alternatives across a combination of four modes and corridor options.

Mode Options

Enhanced Bus 



- Shares lanes with other cars
- Receives priority at traffic signals and uses bypass lanes at select intersections
- Includes state-of-the-art stops with ticket machines
- Carries up to 70 people per bus
- Project Cost: \$

Bus-Rapid Transit 



- Includes all Enhanced Bus features, but travels on a dedicated bus-only lane
- Carries around 120 people in a longer, 60-foot bus
- Project Cost: \$\$

Streetcar 



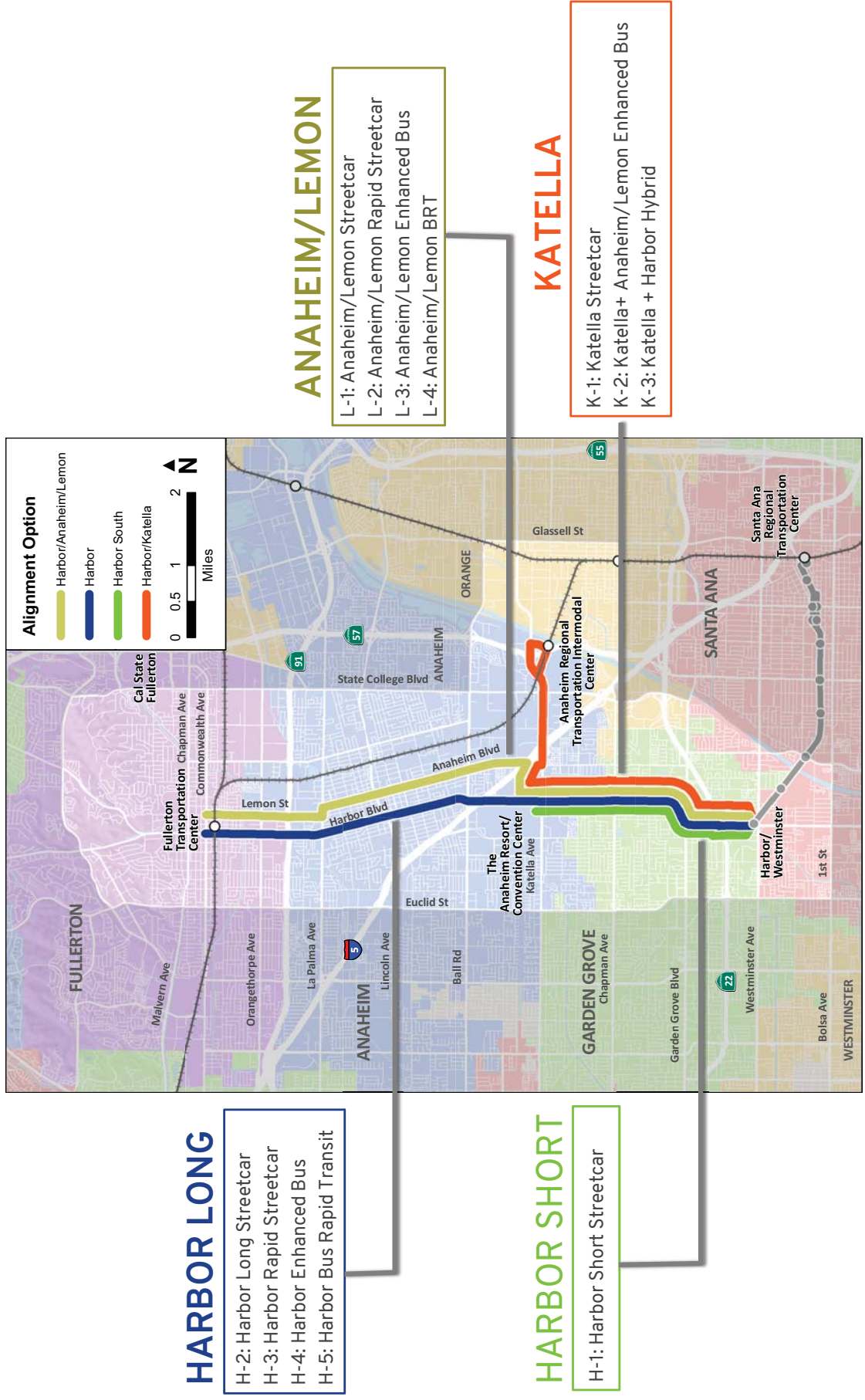
- Shares lanes with cars but travels on its own track embedded in the road
- Powered by overhead wires
- Includes modern stops with ticket machines
- Carries up to 150 people per streetcar (3x as much as regular buses)
- Project cost: \$\$\$

"Rapid" Streetcar 



- Includes all Streetcar features, but uses a dedicated streetcar-only lane
- Faster than a regular streetcar or bus
- Project Cost: \$\$\$

Four Alignment Options, Twelve Alternatives



4 Results

4.1 Evaluation Criteria

OCTA evaluated each of the 12 alternatives according to the criteria below.

Transit Performance

- How long does it take to get to my destination?
- Is the bus or streetcar usually on time?
- Does it encourage more people to ride?

Land Use

- Does project complement nearby land uses?
- Does it support the local economy and help create jobs?
- Is it environmentally-friendly?

Connectivity

- Does the bus or streetcar take me to major destinations?
- Can I reach my destination within one transfer?
- Can I walk or ride my bike to/from a station?

Corridor Constraints

- Does the project affect our roads and traffic?
- Does it make our streets safer?
- Does it complement my neighborhood?

Mode Choice/User Experience

- Does the project encourage more people to ride transit and drive less?
- Does it benefit people without cars?
- Are stops/stations safe and attractive?

Cost Effectiveness

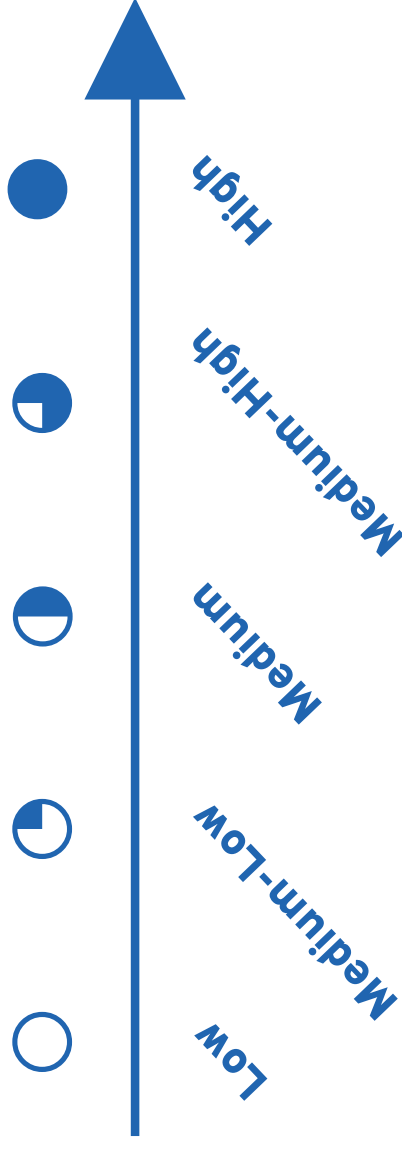
- Is the project a good use of local public funds?
- Does it do a good job of balancing costs and benefits?
- Are there other sources of funding available?

Community Support

OCTA will pursue a project that has broad support from public and all stakeholders.

4.2 Scoring Methodology

Each alternative received an overall score between 0 and 100, according to four qualitative and quantitative measures under the criterion on page 11.¹ The four scores under each criterion were aggregated on a scale from low to high, where "low" = 0 and "high" = 5.



Each criteria was then weighted according to established preferences of the the corridor cities.

The following pages show a detailed scoring breakdown for each alternative ranked by their overall total score.

¹ Community support was factored in separately into the evaluation of alternatives. See next section for results from community surveys.

H-3: HARBOR RAPID STREETCAR



Capital Cost

\$690M

Net Operations & Maintenance Cost

\$1.9M

Boardings

15,200

Travel Time Savings

15%

H-2: HARBOR LONG STREETCAR



Capital Cost

\$610M

Net Operations & Maintenance Cost

\$3M

Boardings

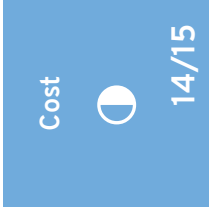
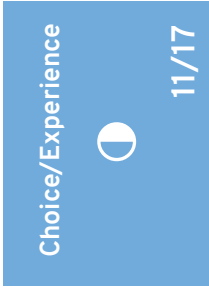
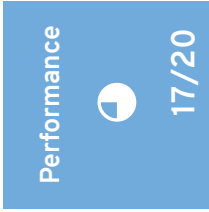
14,700

Travel Time Savings

9%

*Total scores and Harvey Ball ratings may vary slightly across alternative and criteria due to rounding and weighting.
 ** Net Operations & Maintenance costs per year.

H-5: HARBOR BUS RAPID TRANSIT



Capital Cost

\$230M

Net Operations & Maintenance Cost

\$1.1M

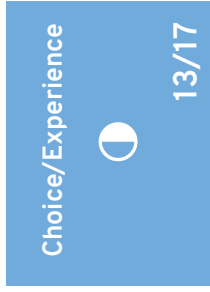
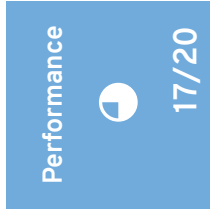
Boardings

14,600

Travel Time Savings

17%

L-1: ANAHEIM/LEMON STREETCAR



Capital Cost

\$660M

Net Operations & Maintenance Cost

\$4M

Boardings

11,300

Travel Time Savings

2%

*Total scores and Harvey Ball ratings may vary slightly across alternative and criteria due to rounding and weighting.
 ** Net Operations & Maintenance costs per year.

L-4: ANAHEIM/LEMON BRT



Capital Cost

\$250M

Net Operations & Maintenance Cost

\$1.8M

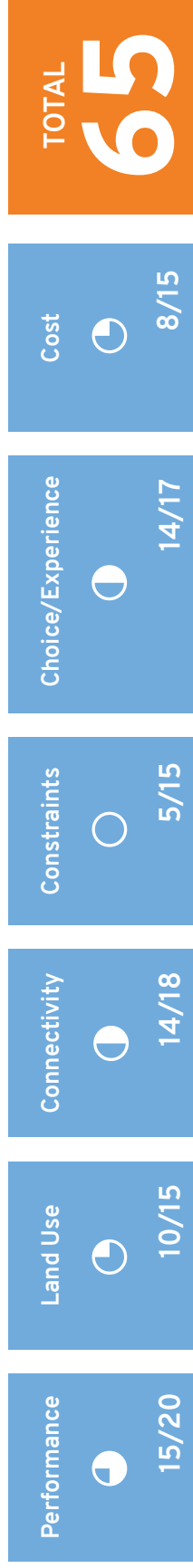
Boardings

12,000

Travel Time Savings

13%

L-2: ANAHEIM/LEMON RAPID STREETCAR



Capital Cost

\$740M

Net Operations & Maintenance Cost

\$3M

Boardings

12,500

Travel Time Savings

9%

*Total scores and Harvey Ball ratings may vary slightly across alternative and criteria due to rounding and weighting.
 **Net Operations & Maintenance costs per year.

K-1: KATELLA STREETCAR



Capital Cost

\$450M

Net Operations & Maintenance Cost

\$5.2M

Boardings

5,500

Travel Time Savings

3%

H-1: HARBOR SHORT STREETCAR



Capital Cost

\$260M

Net Operations & Maintenance Cost

\$3.1M

Boardings

3,700

Travel Time Savings

3%

*Total scores and Harvey Ball ratings may vary slightly across alternative and criteria due to rounding and weighting.
 ** Net Operations & Maintenance costs per year.

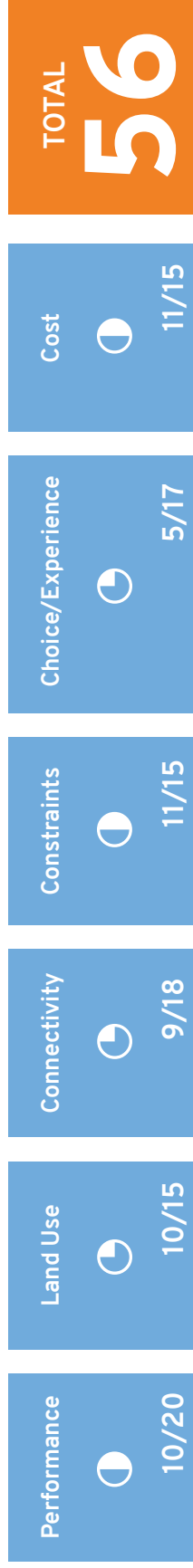


K-2: KATELLA+ANAHEIM/LEMON ENHANCED BUS



Capital Cost **\$60M** Net Operations & Maintenance Cost **\$1.7M** Boardings **4,900** Travel Time Savings **6%**

L-3: ANAHEIM/LEMON ENHANCED BUS



Capital Cost **\$67M** Net Operations & Maintenance Cost **\$1M** Boardings **5,400** Travel Time Savings **7%**

*Total scores and Harvey Ball ratings may vary slightly across alternative and criteria due to rounding and weighting.
 **Net Operations & Maintenance costs per year.

K-3: KATELLA+HARBOR HYBRID



Capital Cost

\$300M

Net Operations & Maintenance Cost

\$3M

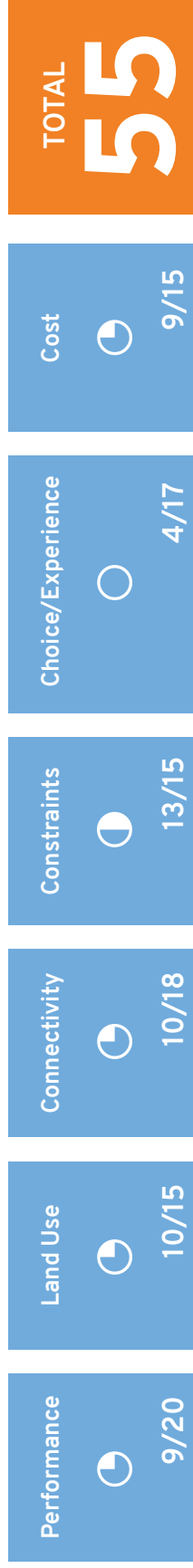
Boardings

7,000

Travel Time Savings

N/A

H-4: HARBOR ENHANCED BUS



Capital Cost

\$64M

Net Operations & Maintenance Cost

\$1M

Boardings

5,200

Travel Time Savings

12%

* Total scores may vary slightly from sum of listed category scores due to weighting and rounding calculations.

** Net Operations & Maintenance costs per year.

Evaluation Results Summary

Alternative	Mode	Description	Transit Performance	Land Use	Connectivity	Constraints	Mode Choice/User Experience	Cost	Weighted Total
H-3	Rapid Streetcar	Harbor Rapid Streetcar from Harbor Blvd/Westminster Ave to FTC	18	11	14	7	14	11	74
H-2	Streetcar	Harbor Long Streetcar from Harbor Blvd/Westminster Ave to FTC	17	11	12	10	14	10	73
H-5	BRT	Harbor Bus Rapid Transit from Harbor Blvd/MacArthur Blvd to FTC	17	11	12	8	11	14	73
L-1	Streetcar	Anaheim/Lemon Streetcar from Harbor Blvd/Westminster Ave to FTC	17	10	12	8	13	8	68
L-4	BRT	Anaheim/Lemon Bus Rapid Transit from Harbor Blvd/MacArthur Blvd to FTC	14	11	12	6	12	12	66
L-2	Rapid Streetcar	Anaheim/Lemon Rapid Streetcar from Harbor Blvd/Westminster Ave to FTC	15	10	14	5	14	8	65
K-1	Streetcar	Katella Streetcar from Harbor Blvd/Westminster Ave to ARTIC	15	11	10	11	12	6	65
H-1	Streetcar	Harbor Short Streetcar from Harbor Blvd/Westminster Ave to Anaheim Resort	16	9	8	13	10	8	64
K-2	Bus	Katella + Anaheim/Lemon Enhanced Bus from Harbor Blvd/Westminster Ave to FTC, every other trip to ARTIC	8	11	11	11	7	11	57
L-3	Bus	Anaheim/Lemon Enhanced Bus from Harbor Blvd/MacArthur Blvd to FTC	10	10	9	11	5	11	56
K-3	Hybrid	Harbor Short Streetcar from Harbor Blvd/Westminster Ave to Anaheim Resort + Enhanced Bus from FTC to ARTIC via Anaheim/Lemon	10	11	11	10	9	7	56
H-4	Bus	Harbor Enhanced Bus from Harbor Blvd/MacArthur Blvd to FTC	9	10	10	13	4	9	55

Note: Individual subtotals may not equal weighted total due to rounding.

■ Harbor Short
 ■ Harbor Long
 ■ Anaheim/Lemon
 ■ Katella

4 Outreach

4.1 Outreach Activities

Open Houses: OCTA held two open houses each in February 2016 and March/April 2017, respectively. Approximately 50 stakeholders attended the open houses.

Stakeholder Workshops: OCTA held two stakeholder workshops, in January 2016 and March 2017. The workshops provided an opportunity for community leaders to provide early feedback. Approximately 40 leaders participated in both workshops.

OCTA Board of Directors: The OCTA Board of Directors provided input on the study during five regular monthly board meetings: Jul 2015, Jan 2016, Oct 2016, Feb 2017, and Mar 2017.



4.2 Public Feedback

OCTA conducted two rounds of surveys in Winter 2016 and Spring 2017 to gauge the community's thoughts on the study. Surveys were conducted onboard OCTA buses and administered online. Respondents were asked to express a preference for mode and corridor. Over 1,000 responses were recorded. Below is a summary of results from the survey.

Mode Preference

- 24%** Rapid Streetcar
- 20%** Enhanced Bus
- 17%** BRT
- 13%** Streetcar
- 10%** Bus/Streetcar Hybrid

Corridor Preference

- 37%** Harbor "Long"
- 23%** Katella
- 20%** Anaheim-Lemon
- 2%** Harbor "Short"



5 NEXT STEPS

This Executive Summary presents the performance evaluation results for the *Central Harbor Boulevard Transit Corridor Study*. A total of twelve conceptual transit alternatives were evaluated against 24 evaluation criteria to help determine which alignments, modes, and features best met the study objectives. These results will be considered along with the city and community input received during the course of the study. This information will help inform decisions about potential advancement of a small group of alternatives into a subsequent study phase. The next study phase would likely include a detailed environmental review, public engagement, and selection of a preferred alternative.

A final round of outreach is proposed in early 2018, to present the evaluation results to each of the cities in the study area and to receive their comments. The study reports will also be available on the study webpage for public review and comment. The input received from the cities, public, and stakeholders will be incorporated into the Final Report and inform the study recommendations.

Study webpage: [**octa.net/harborgetinvolved**](http://octa.net/harborgetinvolved)



Westminster Avenue looking south

Image Sources

All images are OCTA property unless listed below.

Inside Cover: City of Garden Grove. September 2015. www.ci.garden-grove.ca.us/econdev/grove-district-new-website

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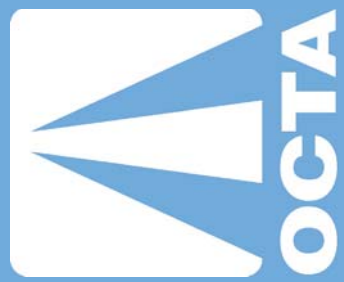
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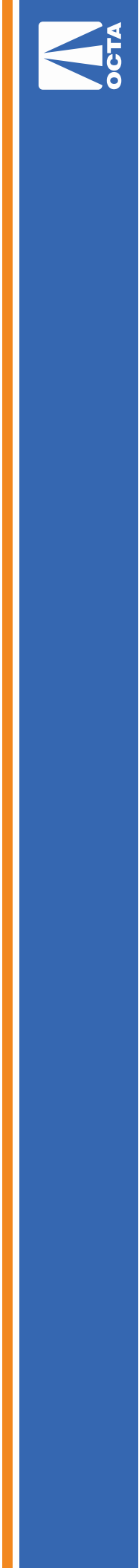
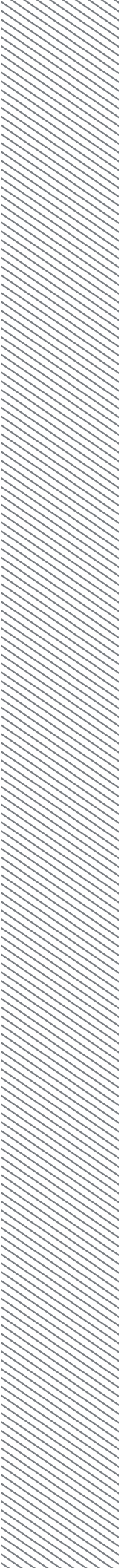
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OCBUS



Maps of the Alignments



No Build Alternative

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

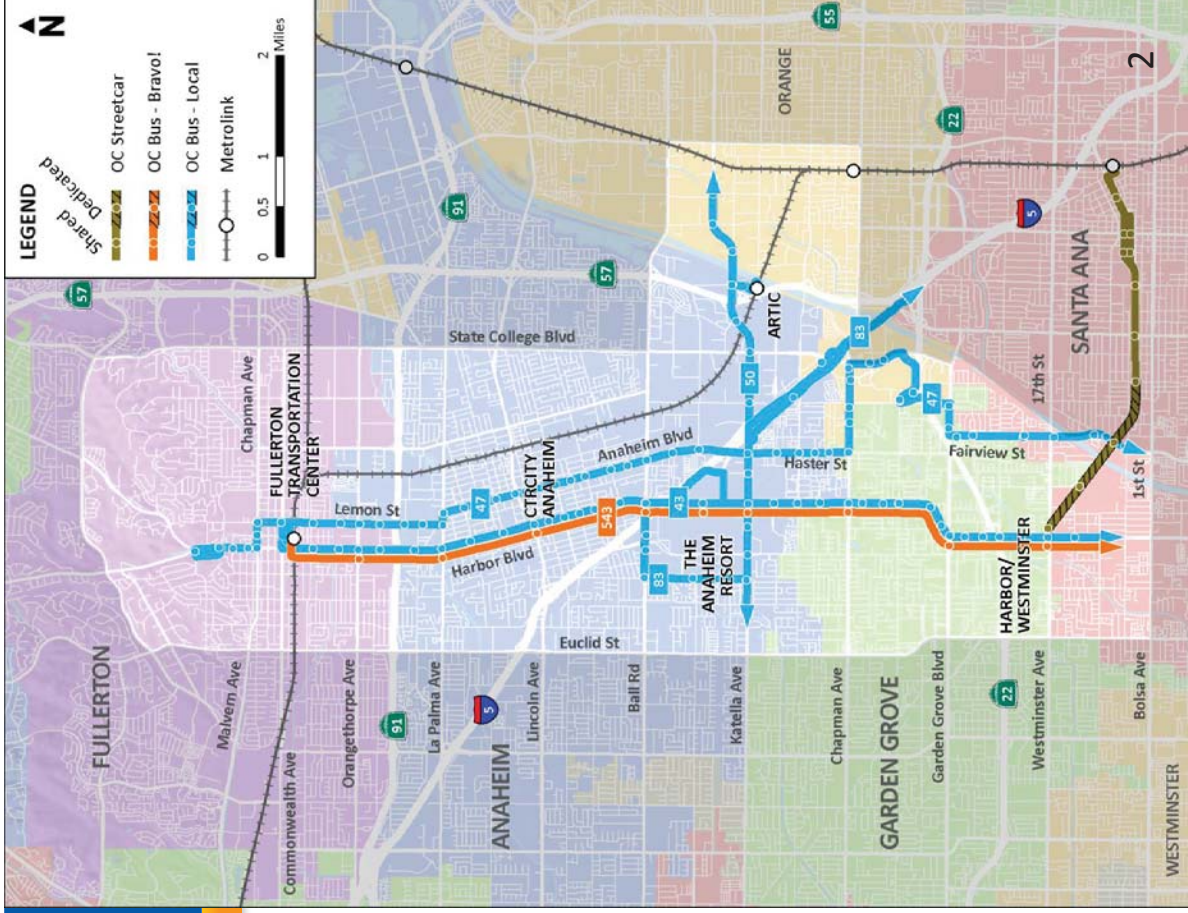
Unchanged

Harbor Bravo! 543

Katella Local 50

Unchanged

Unchanged



H-1: Harbor Short Streetcar

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

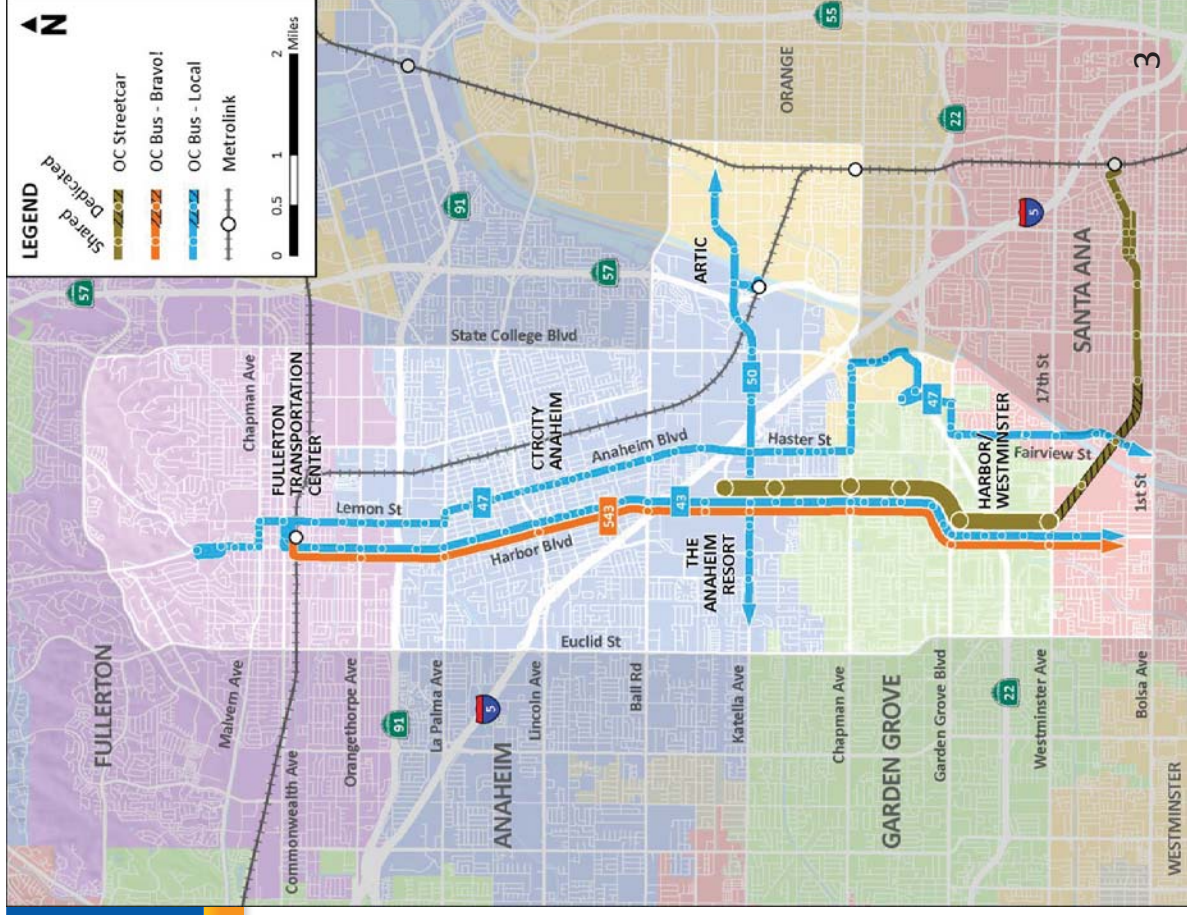
Unchanged

Harbor Bravo! 543

Katella Local 50

Unchanged

Unchanged



H-2: Harbor Long Streetcar

Alignment:

Harbor South

Harbor North

Anaheim/Lemon

Katella

Mode:

Enhanced Bus

Bus Rapid Transit

Streetcar

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Enhanced S of Westminster

Harbor Bravo! 543

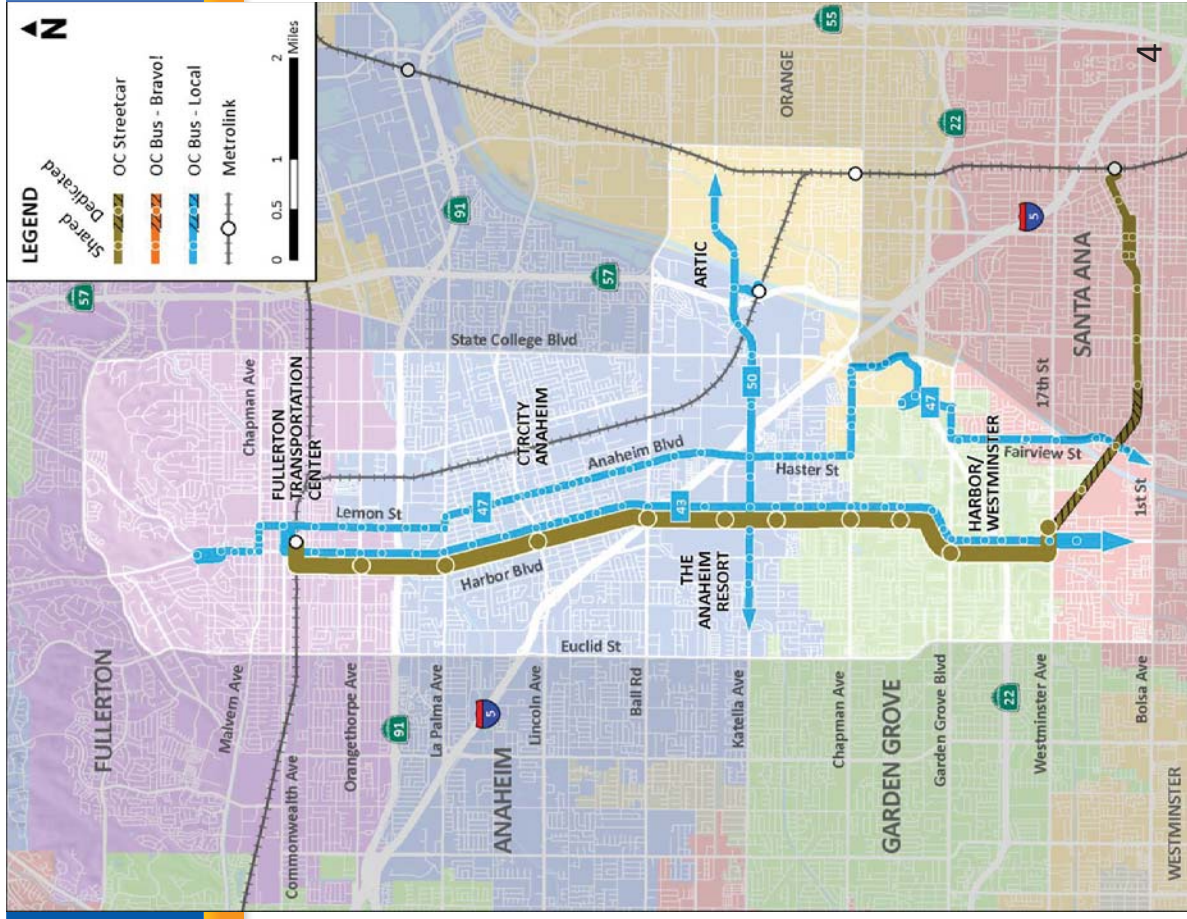
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Anaheim/Lemon Local 47

Unchanged

Katella Local 50

Unchanged



H-3: Harbor Rapid Streetcar

Alignment:

Harbor South

Harbor North

Anaheim/Lemon

Katella

Mode:

Enhanced Bus

Bus Rapid Transit

Streetcar

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Enhanced S of Westminster

Harbor Bravo! 543

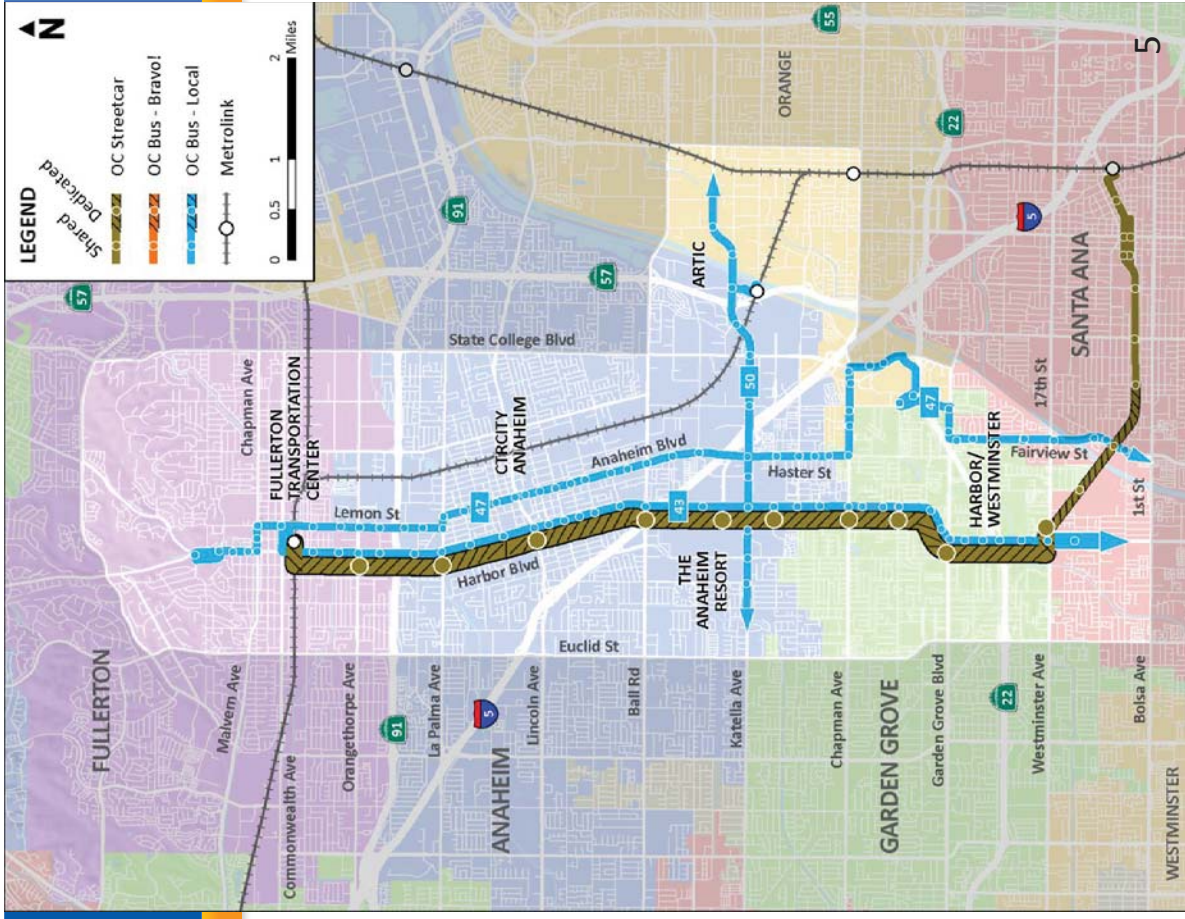
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Anaheim/Lemon Local 47

Unchanged

Katella Local 50

Unchanged



H-4: Harbor Enhanced Bus

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

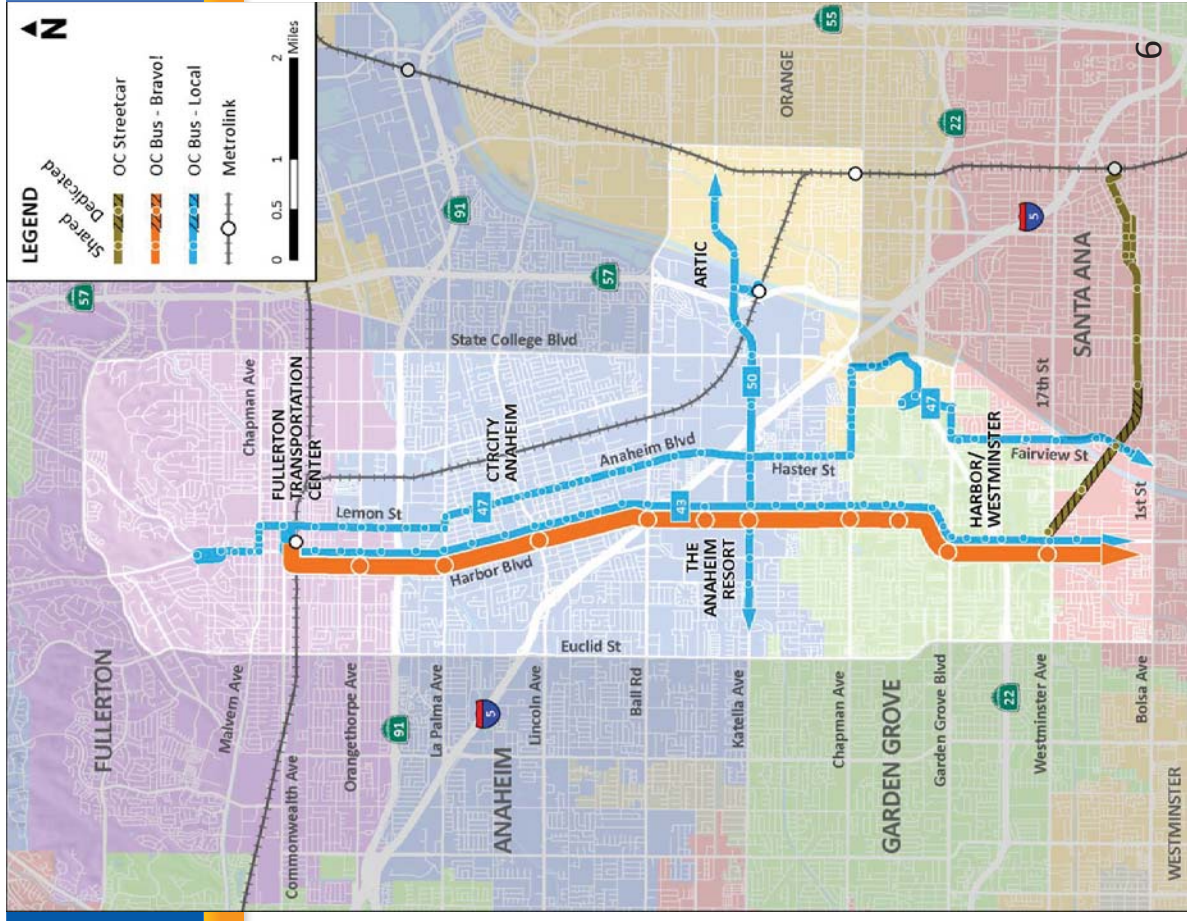
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Harbor Bravo! 543

Katella Local 50

Enhanced

Unchanged



H-5: Harbor Bus Rapid Transit

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

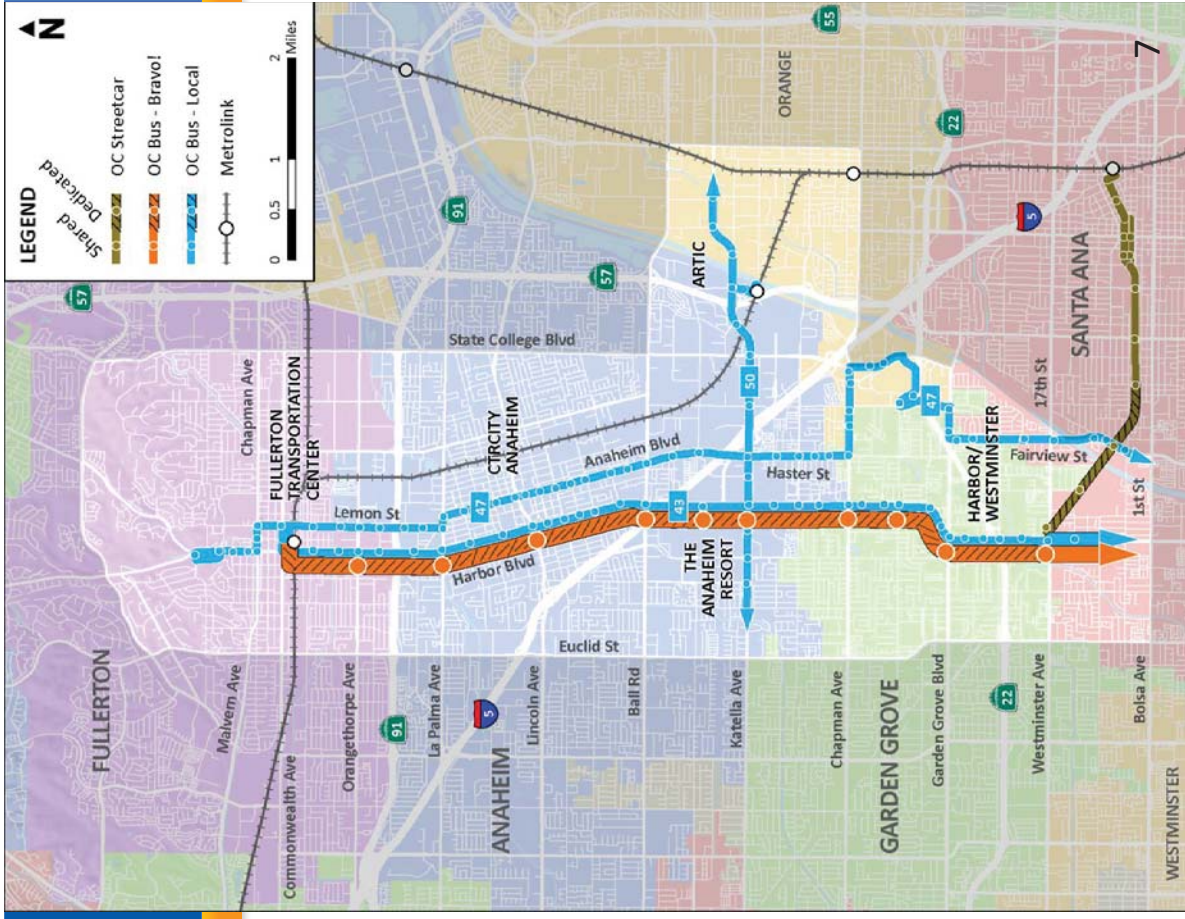
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Harbor Bravo! 543

Katella Local 50

Discontinued

Unchanged



L-1: Anaheim/Lemon Streetcar

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Enhanced S of Westminster

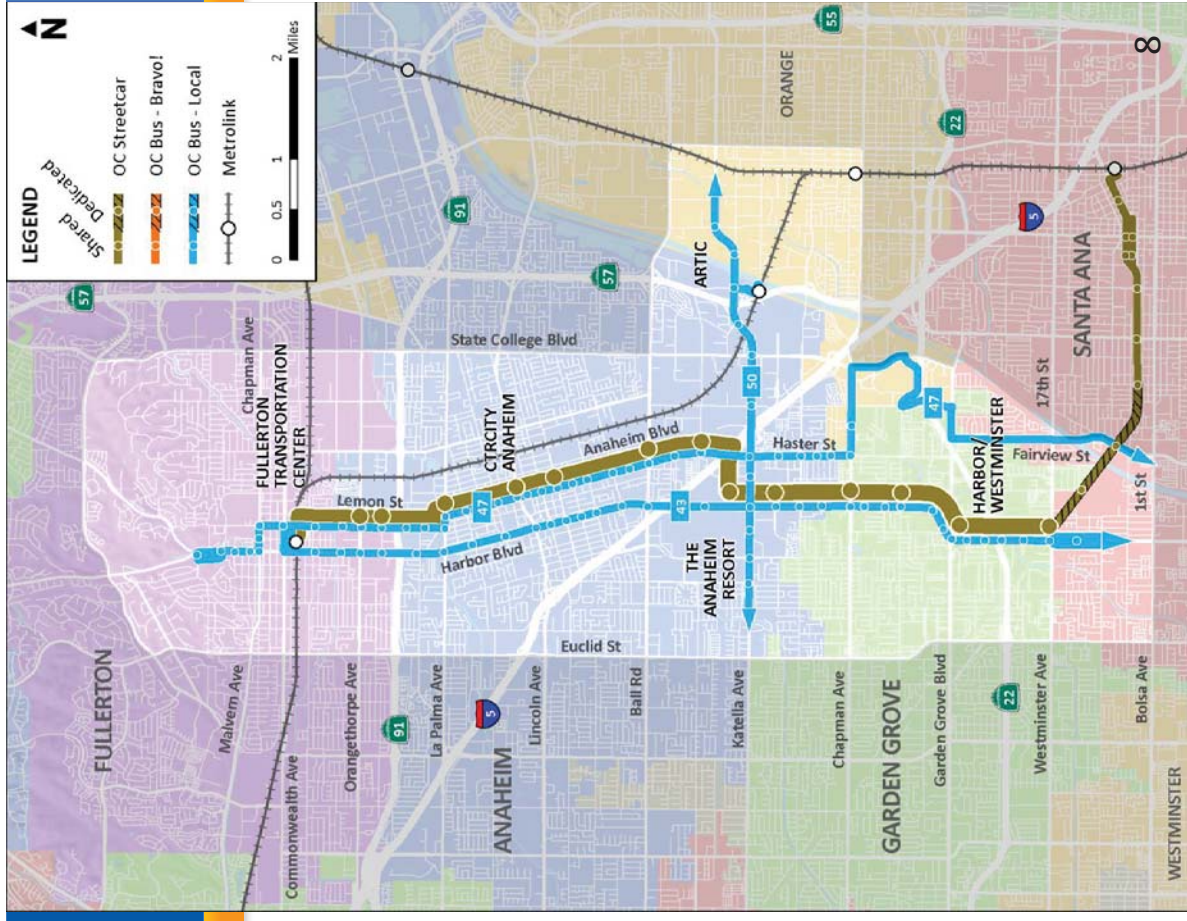
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Harbor Bravo! 543

Katella Local 50

Discontinued

Unchanged



L-2: Anaheim/Lemon Rapid Streetcar

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Enhanced S of Westminster

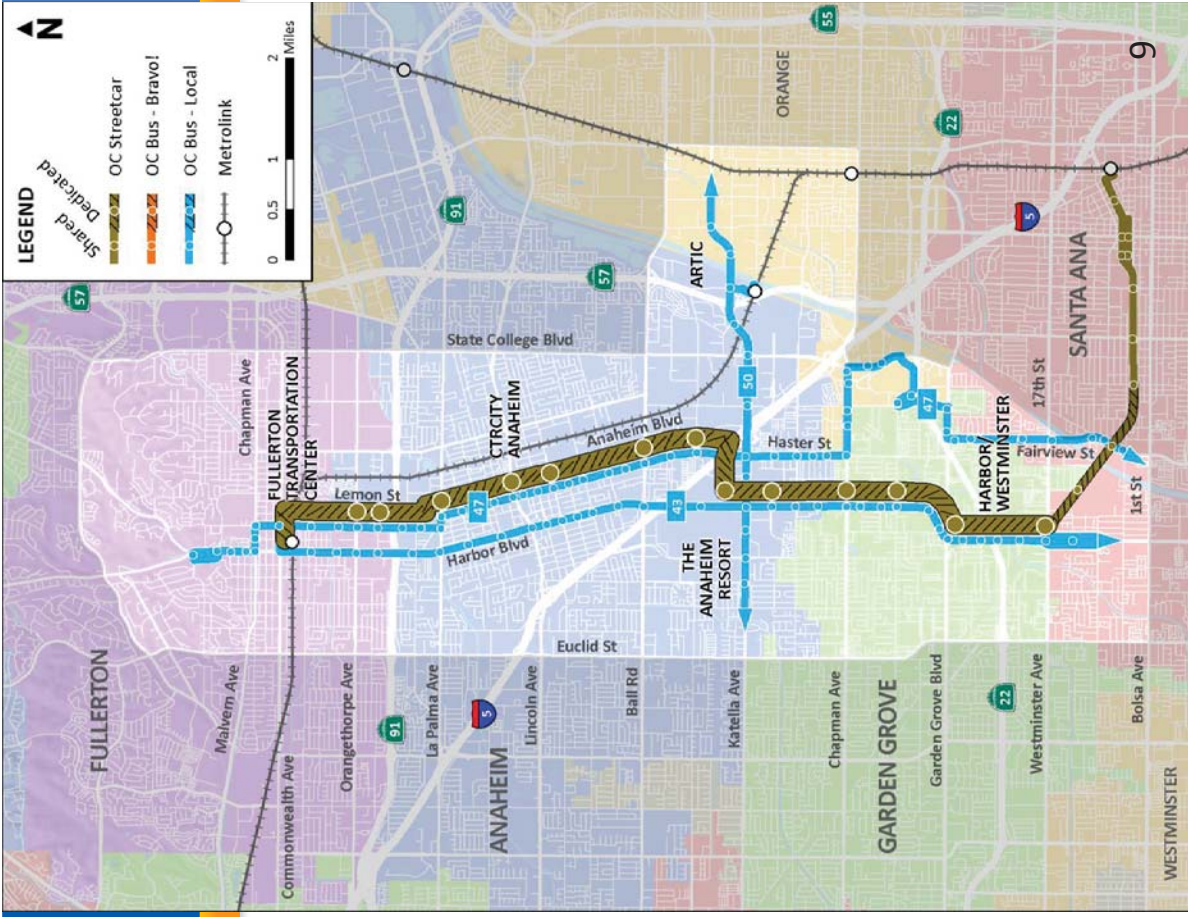
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Harbor Bravo! 543

Katella Local 50

Discontinued

Unchanged



L-3: Anaheim/Lemon Enhanced Bus

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

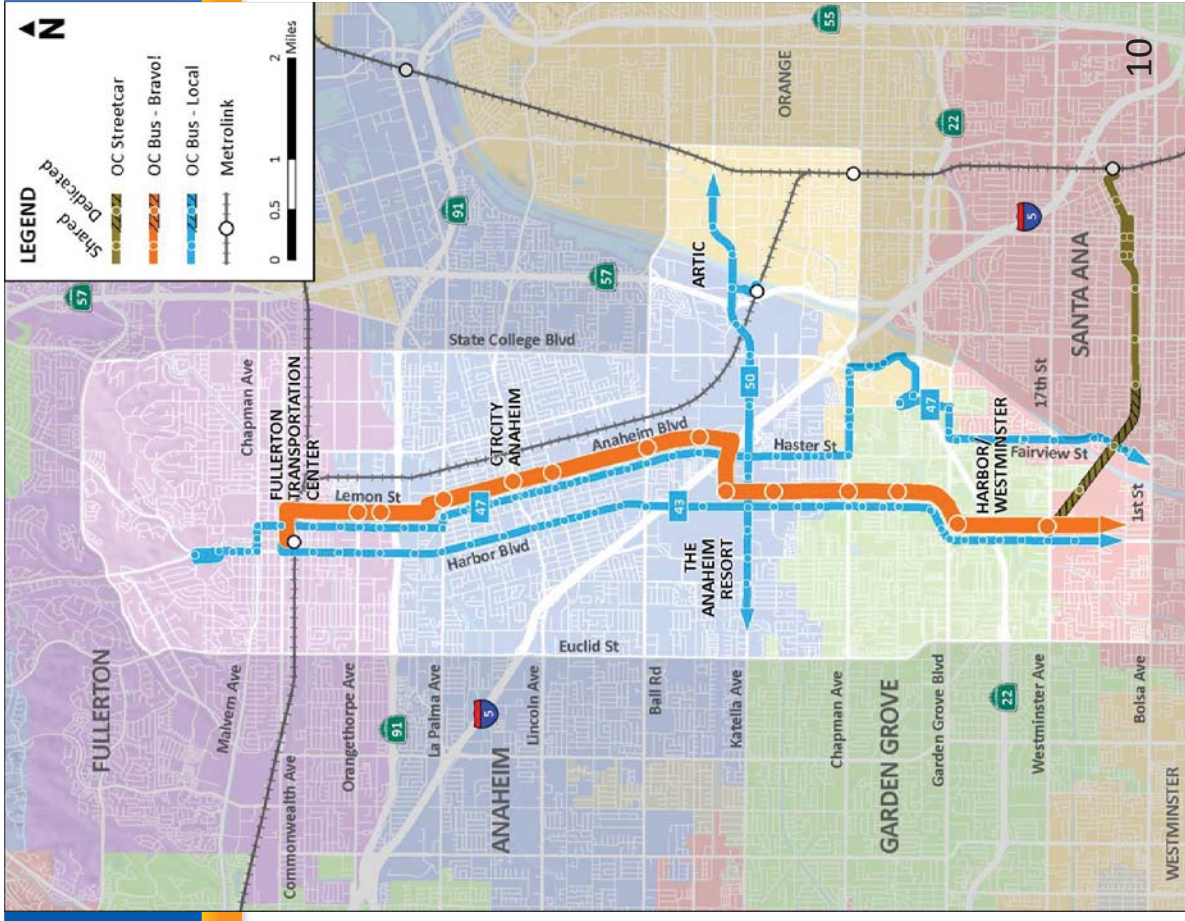
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Harbor Bravo! 543

Katella Local 50

Enhanced / Rerouted

Unchanged



L-4: Anaheim/Lemon Bus Rapid Transit

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

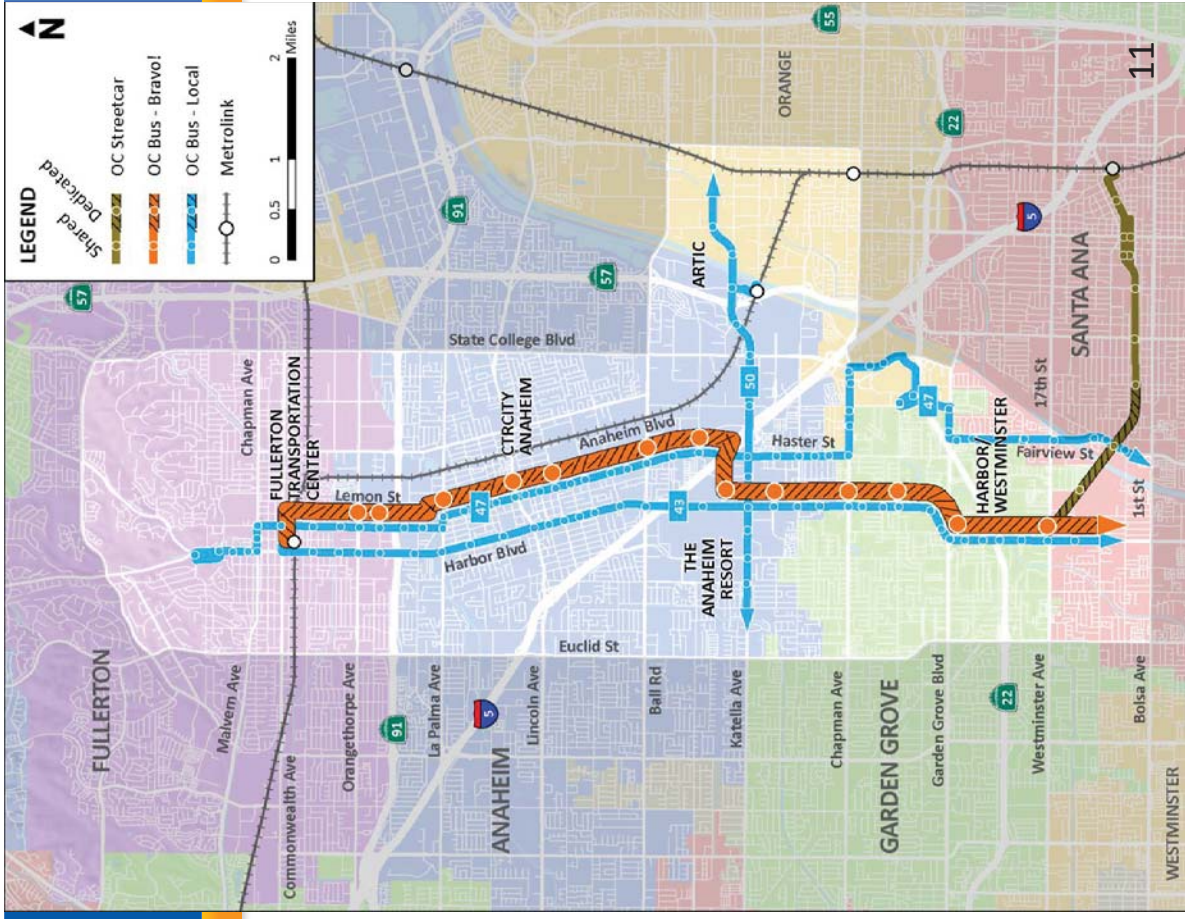
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Harbor Bravo! 543

Katella Local 50

Discontinued

Unchanged



K-1: Harbor-Katella Streetcar

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

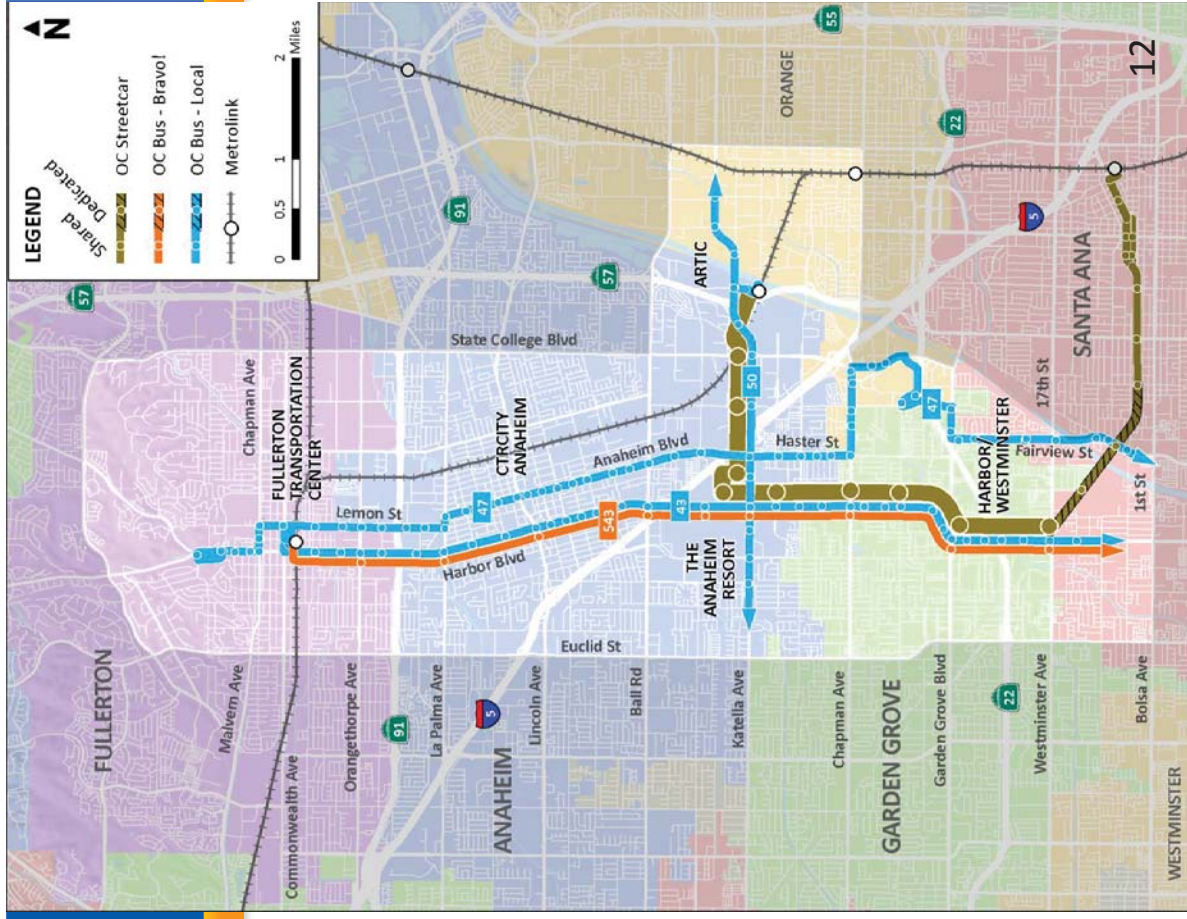
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Harbor Bravo! 543

Katella Local 50

Unchanged

Unchanged



K-2: Katella + Anaheim/ Lemon Enhanced Bus

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Enhanced S of Westminster

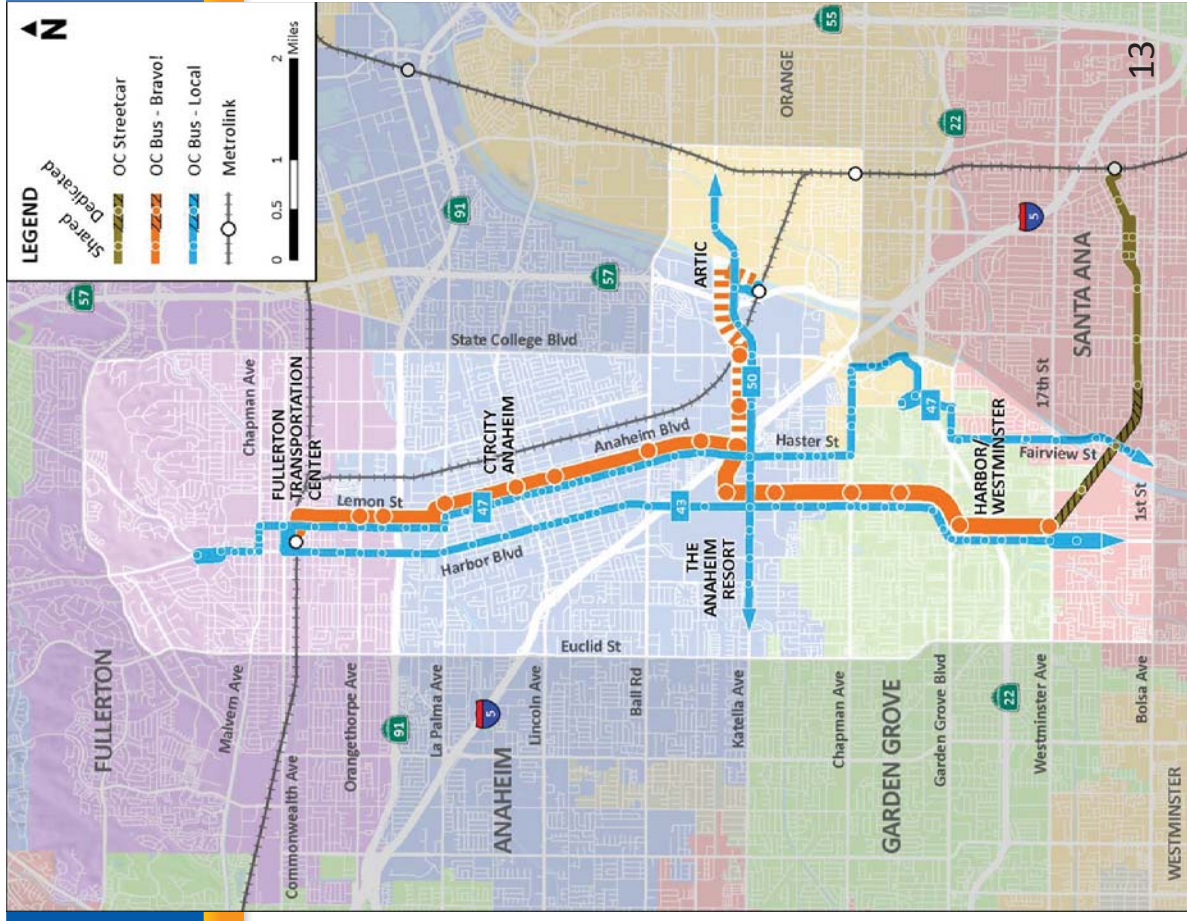
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Harbor Bravo! 543

Katella Local 50

Enhanced / Rerouted

Unchanged



K-3: Katella + Harbor Hybrid

Alignment:

Harbor South

Anaheim/Lemon

Harbor North

Katella

Mode:

Enhanced Bus

Streetcar

Bus Rapid Transit

Rapid Streetcar

Changes to Bus Service:

Harbor Local 43

Anaheim/Lemon Local 47

Unchanged

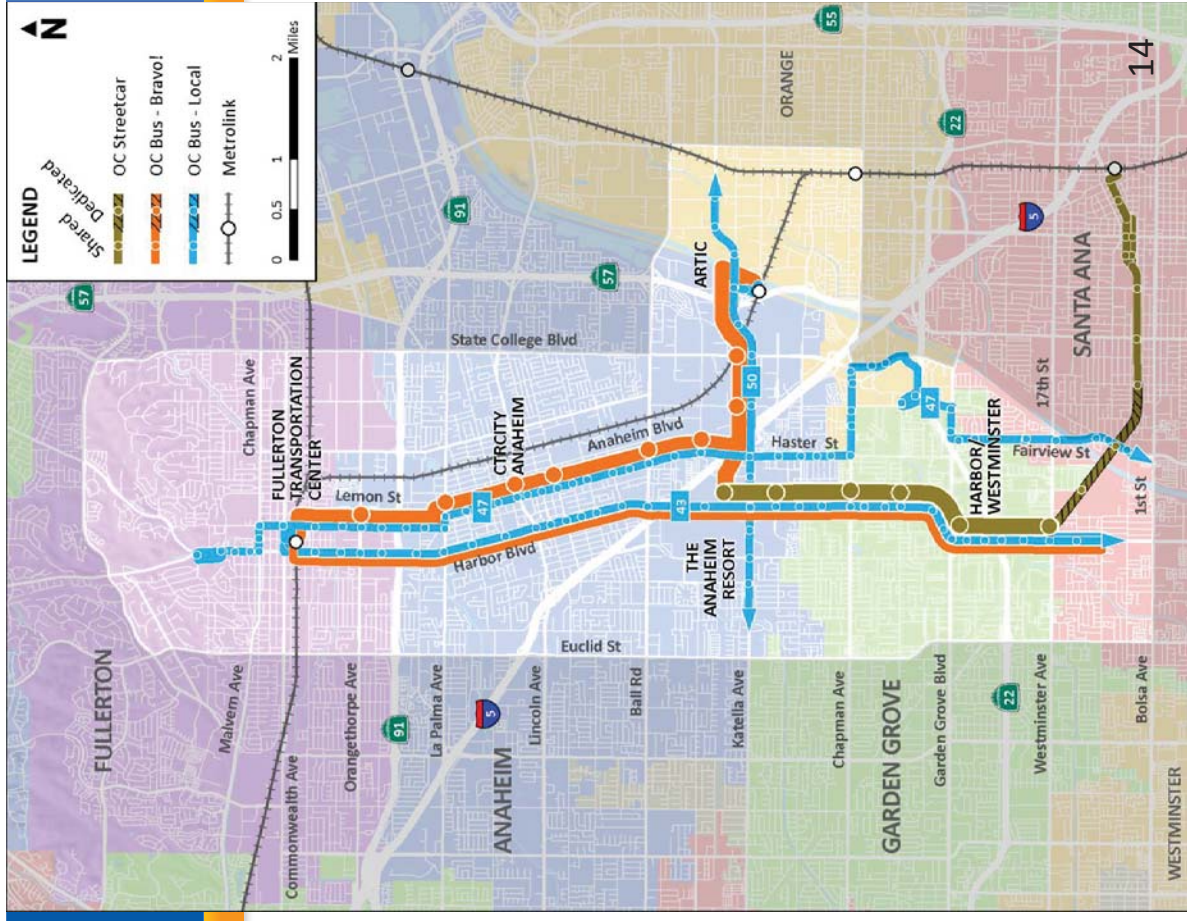
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Harbor Bravo! 543

Katella Local 50

Enhanced / Rerouted

Unchanged



**Central Harbor Boulevard Transit Corridor Study
Evaluation Criteria**

#	Criteria
1. Transit Performance	
a	Average Transit Operating Speed
b	Person Throughput
c	Travel Time Reliability / On-Time Performance
d*	Congestion Relief - New Linked Project Trips
2. Land Use	
a*	Transit-Compatible Land Uses - Station Area Population / Employment Density
b*	Economic Development - Transit Supportive Plans and Policies
c*	Environmental Benefits and Impacts - Vehicle Miles Traveled - Related (Traffic, Air Quality)
d*	Other Environmental Benefits and Impacts (Noise, Historic, etc.)
3. Connectivity	
a	Activity Center Connectivity
b	Zero and One Transfer Rides
c*	Compliance with Long Range Regional Mobility Goals
d*	First / Last Mile Connections - Bike / Pedestrian Amenities and Linkages
4. Corridor Constraints	
a	Optimally Allocate Roadway Infrastructure
b	Overall Safety / Collision Hot Spots
c	Optimize Traffic Operations
d	Physical Corridor Constraints (Bridges, Rail Crossings, etc.)
5. Mode Choices / User Experience	
a	New Riders (System-Wide)
b	Mode Share
c*	Mobility Improvement - Linked Trips on Project
d	Station User experience / Level of Amenities
6. Cost-Effectiveness	
a*	Cost-Effectiveness - Capital + Operations and Maintenance Costs / Project Trips
b	Incremental Cost per New Transit Trip
c	Farebox Recovery
d	Financial Feasibility (Cost, Suitability for Funding, etc.)

*Starred criteria match Federal Transit Administration New Starts evaluation criteria

7. Community Input	
a	Description of Outreach Plan Activities including Dates and Times
b	Summary of Comments Received and Key Issues

Ridership Summary Table

Alternative	Average Weekday Boardings	Per-Mile Boardings	New Systemwide Boardings	Systemwide Increase (%)
H3: Harbor Long Rapid Streetcar ¹	15,200	1,900	15,500	9.8%
H2: Harbor Long Streetcar	14,700	1,800	15,200	9.6%
H5: Harbor Bus Rapid Transit ^{1*}	14,600	1,200	15,500	9.8%
L2: Anaheim-Lemon Rapid Streetcar ¹	12,500	1,500	12,000	7.6%
L4: Anaheim-Lemon Bus Rapid Transit ^{1*}	12,000	1,000	11,500	7.3%
L1: Anaheim-Lemon Streetcar	11,300	1,300	10,300	6.5%
K3: Katella + Harbor Hybrid	7,000	700	3,100	2.0%
K1: Harbor-Katella Streetcar*	5,500	900	7,500	4.7%
L3: Anaheim-Lemon Enhanced Bus*	5,400	430	400	0.3%
H4: Harbor Enhanced Bus*	5,200	430	500	0.3%
K2: Katella + Anaheim-Lemon Enhanced Bus	4,900	470	400	0.3%
H1: Harbor Short Streetcar*	3,700	1,100	7,500	4.7%

¹Operates in a dedicated transit lane for at least 50% of the alignment.

*Extends to MacArthur Boulevard, consistent with existing Bravo! Route 543 service area.

Cost and Cost-Effectiveness Table

Alternative	Capital Cost (YOE\$) ²	Annual O&M Cost ³	Annual Linked Trips on Project	Annual Cost/Rider
H1: Harbor Short Streetcar	\$ 260,000,000	\$ 3,093,161	821,277	\$11.73
H2: Harbor Long Streetcar	\$ 610,000,000	\$ 2,973,797	3,261,832	\$5.58
H3: Harbor Long Rapid Streetcar ¹	\$ 690,000,000	\$ 1,942,744	3,377,764	\$5.54
H4: Harbor Enhanced Bus*	\$ 64,000,000	\$ 1,039,770	1,141,807	\$2.68
H5: Harbor Bus Rapid Transit ^{1*}	\$ 230,000,000	\$ 1,095,776	3,242,547	\$2.72
L1: Anaheim-Lemon Streetcar	\$ 660,000,000	\$ 4,004,851	2,504,395	\$8.18
L2: Anaheim-Lemon Rapid Streetcar ¹	\$ 740,000,000	\$ 2,973,797	2,780,814	\$7.60
L3: Anaheim-Lemon Enhanced Bus*	\$ 67,000,000	\$ 1,039,770	1,200,771	\$2.62
L4: Anaheim-Lemon Bus Rapid Transit ^{1*}	\$ 250,000,000	\$ 1,752,130	2,669,537	\$3.78
K1: Harbor-Katella Streetcar*	\$ 450,000,000	\$ 5,155,268	1,210,524	\$13.69
K2: Katella + Anaheim-Lemon Enhanced Bus	\$ 60,000,000	\$ 1,672,356	1,081,292	\$3.40
K3: Katella + Harbor Hybrid	\$ 300,000,000	\$ 2,990,736	1,545,685	\$6.89

¹Operates in a dedicated transit lane for at least 50% of the alignment.

*Extends to MacArthur Boulevard, consistent with existing Bravo! Route 543 service area.

²YOE assumes a 2025 implementation date.

³Net Change in O&M from 2035 Baseline.

YOE - Year of expenditure

O&M - Operation and maintenance

Orange County Transportation Authority

Central Harbor Boulevard Transit Corridor Study

Public Outreach Summary Report



FULLERTON



ANAHEIM



GARDEN GROVE



SANTA ANA

EXECUTIVE SUMMARY

The Orange County Transportation Authority (OCTA) is charged with maintaining and improving the complex transportation network that serves the residents, workers and visitors in California's third largest county. As car travel is ever more constrained by the growing population and increasing development densities, OCTA is working to identify and study opportunities to enhance multi-modal transit solutions.

Few corridors are as uniquely positioned for consideration of a multi-modal transit approach as the portion of Harbor Boulevard that travels through the cities of Santa Ana, Garden Grove, Anaheim and Fullerton from Westminster Avenue to Chapman Avenue. Today, Harbor Blvd. bears the distinction of being a major north-south connector for car traffic, is one of the busiest bus corridors in the County and demonstrates a unique mix of small business, resort, residential, industrial, education and mobility features. Additionally, Harbor Blvd. at Westminster Ave. will serve as the terminus for the OC Streetcar, slated to enter construction in 2018.

With this in mind, in 2015, OCTA launched the Central Harbor Blvd. Transit Corridor Study to consider how transit could be improved and enhanced in this vital area. The public outreach for the study was conducted in two phases, Phase 1 focused on introducing the Study and its goals, and establishing the criteria that would be used to develop and consider preliminary alternatives including transit technologies and routes. Phase 2 provided additional details on transit technologies/modes and its features, and options related to route alignments both on and adjacent to Harbor Blvd. including the Anaheim/Lemon route and an east-west connection along Katella Ave. to/from the Anaheim Regional Transportation Intermodal Center (ARTIC) and packaged them into 12 preliminary alternatives for consideration.

OCTA developed a comprehensive outreach strategy to provide stakeholders with the choice to engage in the manner most convenient for them. The outreach team facilitated meetings focused on the Study via key stakeholder workshops and open house meetings, presented to stakeholders via city council presentations and speakers bureau engagements, and reached out to transit users on buses along the corridor and nearby Metrolink stations. In addition, OCTA conducted online and social media outreach emphasizing the option of feedback through online surveys, which combined yielded more than 1,000 responses.

KEY FINDINGS

The overall feedback confirmed that Harbor Blvd. should be a focus for transit improvements. Following are the key findings:

- Stakeholders could see the benefit of offering transit options that are more efficient and convenient.
- Transit mode preference was mixed with an almost even split between streetcar and bus options.
- Route preference also was mixed and dependent on stakeholders' individual mobility needs and interests. However, the online survey results indicated the Harbor Blvd. corridor from Westminster Ave. to the Fullerton Transportation Center was most preferred.
- Most important transit characteristics are frequency of service, travel time compared to other modes, and convenient service hours, respectively.
- Primary activities participated in the study area included working, dining, and shopping, respectively.
- Attracting non-transit users is dependent on significant improvements that make transit more competitive with the ease of car travel.
- Generally, stakeholders are interested and generally supportive of transit investment, but need more information on the alternatives being considered to better indicate future preferences.

STUDY BACKGROUND

Harbor Boulevard is Orange County's busiest north/south transit corridor, carrying approximately eight percent of countywide bus ridership through some of the most densely populated and diverse areas of the County. Throughout the region and in close proximity to this corridor, efforts to improve transit service and mobility connections are taking place. Directly adjacent to this study is the OC Streetcar, connecting the Santa Ana Regional Transit Center (SARTC) through downtown Santa Ana to a planned terminus in Garden Grove at the intersection of Harbor Blvd. and Westminster Ave. OC Streetcar is in the development phase with design activities under way and construction anticipated to start in spring 2018. At the northern end of the Harbor Blvd. study area, the City of Fullerton completed the College Connector Study to evaluate options to improve connections between the transportation center, Downtown Fullerton and local college campuses, most notably Fullerton College and California State University, Fullerton.

Given the current and planned transit service in the corridor, the Study – through technical evaluation and stakeholder engagement – identified numerous alternatives to improve mobility. The alternatives include alignment options both on and adjacent to Harbor Blvd. and consider a variety of transit technologies. The Study Team, through technical evaluation and stakeholder feedback, will narrow down the initial 12 alternatives and will continue to study and refine these options during the next year.

During the course of the Study, traditional outreach opportunities were combined with a digital communication and social media program in order to reach the diverse stakeholder population interested in the future of transit on Harbor Blvd. Outreach was conducted in two phases based upon the technical milestones; Phase 1 - introducing and defining the study and its evaluation criteria and Phase 2 - presenting draft alternatives, including: alignment and technology options. During each outreach phase, a key stakeholder workshop was convened, open house meetings hosted and online survey offered. Stakeholder feedback has helped shape and further develop the alternatives being considered.

Targeted stakeholder audiences included: elected officials; representatives from the environmental, business, education, community, faith, transit and tourism industries; neighborhood and community based groups; transit users; social media audiences; and the general public.

OUTREACH: PHASE 1

TACTICS

Public outreach efforts supporting the first phase of the Harbor Study focused on introducing stakeholders to the study, establishing expectations related to the goals of the study, highlighting areas of study and what they could expect to learn, and identifying opportunities for their feedback to be heard.

Study Overview:

- OCTA is committed to improving transit in the Harbor Blvd. study area.
- As Orange County continues to grow along Harbor Blvd. mobility options need to be considered.
- This study is the first step in determining the future of transit in the corridor; alternatives will be developed for further study and later environmental review.

Introducing the Harbor Study:

- Defining the Corridor:
 - Harbor Blvd. is a unique corridor connecting the cities of Santa Ana, Garden Grove, Anaheim and Fullerton (and beyond).
 - Reflects the diversity of Orange County, with significant population density, busiest bus corridor, land uses including: multi-family units, single family homes, historic properties, small businesses and resort properties.
- Study Goals and Objectives
 - Develop a set of alternatives to improve transit on Harbor Blvd.

- Purpose and Need
- Route Options and Transit Modes
 - Consider both a Harbor Blvd. only route and a hybrid route that travels north on Harbor Blvd. and then veers east to run parallel traveling north on Anaheim Blvd./Lemon St.
 - Identify the transit modes being considered, including bus, bus rapid transit and streetcar options
- Public Participation
 - Stakeholder feedback from partner cities, key stakeholder organizations and the public is important in shaping the alternatives to improve transit and mobility in the study area.

To best share the Phase 1 tactics, the following outreach activities took place:

- Key Stakeholder Workshop
- City Council Presentations
- Open House Meetings
- Speaker Bureau Presentations
- Online Survey
- Earned Media and Email Blasts

KEY STAKEHOLDER WORKSHOP

In an effort to engage a diverse group of stakeholders in the study process, OCTA hosted a Key Stakeholder Workshop (KSW) on January 28, 2016. The KSW provides an opportunity for community leaders to receive information in advance of the general public and provide early feedback. This helped the study team confirm assumptions, identify possible areas of concern and reach deeper into the community by asking participants to share information with their constituents. Specifically, participants are asked to assist OCTA by sharing information about upcoming public meetings and online survey opportunities, and are encouraged to schedule a Speakers Bureau presentation to provide their members with study information.

OCTA invited more than 75 leaders to participate in the KSW representing organizations from the following fields: business, tourism, education, faith, neighborhood/HOA, community, health, multicultural, etc. Invitees received both a letter via mail and email, as well as a follow up phone call(s) to solicit RSVP. Approximately 19 stakeholders participated.

During the meeting, the study was introduced and information supporting the tactics outlined earlier in this report was shared. A PowerPoint presentation was provided and stakeholders were encouraged to ask questions and provide feedback throughout the workshop. Feedback from the KSW focused on:

- Congestion challenges facing Harbor Blvd. today, lack of existing capacity to accommodate what's there now.
- Heavy pedestrian traffic delaying vehicle traffic in the Resort Area (Garden Grove and Anaheim).
- Improvements to enhance active transportation options.

The KSW invitee list, invitation letter, meeting agenda, PowerPoint presentation and meeting notes can be found in Appendix A.

OPEN HOUSES

OCTA hosted two open houses in February 2016 to provide the public with an opportunity to learn about the Study, ask questions and provide feedback.

OCTA is committed to conducting comprehensive public outreach programs that inform and engage stakeholders. Given the diversity of the corridor, a variety of noticing strategies were utilized to reach and engage interested stakeholders including: mailing notices, counter flyer distribution, on-bus noticing, emails blasts, social media, media coverage, and study and community partner resources.

A. Mailing of Notices

Bilingual (English and Spanish) postcard notices with additional text in Vietnamese and Korean offering language services were developed to publicize the Community Open Houses. Meeting notices were mailed to approximately 7,600 owner/occupants. Addresses were identified based on proximity to Harbor Boulevard, and the Lemon Avenue/Anaheim Boulevard corridor option.

B. Counter Distribution and Extended Notification Efforts

Bilingual (English and Spanish) meeting notices were distributed at the public counters of all four city halls (Santa Ana, Garden Grove, Anaheim and Fullerton). Additional notices were provided to the City of Santa Ana's Com-Link Council and the City of Anaheim's Central and West Neighborhood District meetings. Meeting flyers were also designed and distributed on buses serving the Harbor Boulevard Study Area.

The four partner cities, elected official district offices, and more than 100 key stakeholder organizations were asked for their support to promote the meetings as well as the online survey through their respective electronic communication tools, including websites, e-newsletters, social media sites, and membership e-blasts. Sample language was provided for possible e-blasts and/or newsletter articles, as well as Facebook posts. In addition, an announcement about the open houses took place at two Anaheim Neighborhood Services meetings in January.

C. E-Blasts/Social Media

The electronic version of the flyer was distributed via OCTA's *On the Move* Blog to more than 3,000 email contacts included in OCTA's stakeholder database. The notice was sent out two weeks in advance of the start of the Open Houses and a reminder notice was sent out prior to the meetings. The second e-blast distribution also included an additional 1,179 stakeholders identified as Harbor Boulevard bus riders during outreach conducted for OCTA's bus service changes.

OCTA's Facebook page was also utilized to build awareness for the project and the open houses, with posts on February 16, 18 and 22. Facebook ads were also created utilizing images of proposed transit technologies and key destinations. The ads linked back to information on the open house meetings and later to the online survey. 11,647 stakeholders had access to the ads and 209 clicked for more information.

Copies of the meeting notices, flyers, emails blasts, Facebook posts can be found in Appendix B.

Meeting Format

The two Open Houses took place from 5:00 to 8:00 p.m. and featured information stations staffed by project team members. Each meeting provided Spanish language support by having a bilingual technical and outreach team member available to engage with stakeholders. A looping PowerPoint presentation was displayed throughout the meeting. Approximately 25 stakeholders attended the meetings.

A virtual meeting was made available following the meetings via the OCTA website and featured the full complement of information boards and looping presentation. Open House location information is shown below.

Open House Locations

Community	Date	Location/Address
Fullerton	Wednesday, February 24, 2016	Fullerton Community Center 340 W. Commonwealth Fullerton, CA
Garden Grove	Thursday, February 25, 2016	Garden Grove High School 11271 Stanford Ave. Garden Grove, CA

Project team members staffed the information stations based on their technical expertise. An overview of the stations, PowerPoint and materials can be found in Appendix C.

Media Coverage

OCTA Media Relations drafted and distributed a press release (Appendix D) introducing the project and publicizing the open houses. The release was distributed to the following media outlets:

- Orange County Register
- Fullerton News Tribune
- Anaheim Bulletin
- La Habra Star/Brea Progress
- Patch.com
- Los Angeles Times
- Daily Pilot
- Huntington Beach Independent
- Voice of OC
- Nguoi Viet Daily News
- La Opinión
- Rumores
- Excelsior
- KPCC
- KCRW
- KFI
- KNX

ONLINE SURVEY

OCTA provided stakeholders with an online survey option so the public could participate, gather additional information from the website and provide their thoughts related to the Study's goal of developing transit options for Harbor Blvd.

A link to the online survey was shared via the study website, email blasts, on tablets at the open house meetings, distributed by ride share coordinators for large employers and via Facebook ads.

The online survey, was provided in English, Spanish and Vietnamese. The survey garnered 603 unique visits and 413 responses, which equates to a 68.5 percent completion rate. The majority of respondents were commuters, employees and/or residents within the study area, with more than 60 percent using transit on a daily, weekly or monthly basis. Out of these individuals, 69 percent were between the ages of 25 and 54.

Survey Results

The following is a summary of the feedback received via the online survey.

Topic	Responses		
Biggest challenges for transit in the study area	Transit/roadway performance (27%)	Mode choices (25%)	Connectivity (17%)
Average rating for mode option preferences (Out of 10)	7.07 for streetcar	6.60 for bus rapid transit	6.10 for limited-stop bus
Most important transit characteristics (Able to choose multiple)	Frequency of service (59%)	Travel time compared to other modes (54%)	Convenient service hours (52%)
Most important connection within the study area	Disneyland Resort (39%)	Downtown Anaheim (17%)	Fullerton Transportation Center (13%)
Major activities participated within the study area (Able to choose multiple)	Working (64%)	Dining (54%)	Shopping (38%)

A copy of the online survey is provided in Appendix E.

IMPORTANT CONSIDERATIONS OF PHASE 1 PUBLIC FEEDBACK

Feedback from the aforementioned outreach activities yielded the following themes:

- Improve connectivity of transit services locally and regionally, first/last mile connection particularly important
- Maintain or improve pedestrian and bicycle access in the corridor
- Provide efficient linkages to key destinations
- Make sure service is expanded to serve the hours of Disneyland and sporting events
- Signal synchronization between jurisdictions to improve traffic flow for all vehicles
- Address congestion during peak times on Harbor Blvd., including long waits at intersections and behind buses

OUTREACH: PHASE 2

TACTICS

Public outreach efforts supporting the second phase of the Harbor Study focused on sharing and receiving feedback on the 12 draft alternatives developed to improve transit in the Study area. To help stakeholders better differentiate their alternative preference, messaging is focused on the two main differentiating factors: route and transit technology.



Study Overview:

- Remained consistent with what is identified in Phase 1.

12 Alternatives:

- The Alignment Options:
 - Harbor Long - connecting from Westminster Ave. in the south to Chapman Ave. in the north
 - Harbor Short - connecting from Westminster Ave. in the south to the Resort area in Anaheim
 - Anaheim/Lemon - connecting from Harbor Blvd. at Westminster Ave. in the south then traveling east to travel north on Anaheim/Lemon to the Fullerton Station area
 - Katella - connecting from Harbor Blvd. at Westminster Ave. in the south then traveling east on Katella Avenue to ARTIC
 - Katella/Anaheim/Lemon - connecting from Harbor Blvd. at Westminster Ave. in the south then traveling east on Katella Avenue to ARTIC then traveling west to travel north on Anaheim/Lemon to the Fullerton Station area
- Transit Modes:
 - Enhanced Bus
 - Bus Rapid Transit
 - Streetcar
 - Rapid Streetcar
- Public Participation
 - Stakeholder feedback from partner cities, key stakeholder organizations, and the public is important in shaping the alternatives to improve transit and mobility in the study area.

To best share the Phase 1 tactics, the following outreach activities took place:

- Key Stakeholder Workshop
- City Council Presentations
- Open House Meetings
- Speaker Bureau Presentations
- Online Survey
- Earned Media and Email Blasts

KEY STAKEHOLDER WORKSHOP

The second Key Stakeholder Workshop (KSW) was convened on March 9, 2017. Approximately 100 key stakeholders were invited to participate in the KSW, including stakeholders invited to

participate in the first meeting and additional stakeholders identified as representing the Katella corridor area were added to the invitation list. 21 stakeholders participated.

To share the 12 Alternatives, a PowerPoint presentation was used and stakeholders were encouraged to review a roll plot of the study area and information boards displaying route and transit technology options. Stakeholders were encouraged to ask questions and provide feedback throughout the Workshop.

Feedback from the KSW focused on:

- Developing additional information to weigh the benefit of adding transit that could impact or reduce the number of lanes available for other vehicle traffic.
- Consider improving pedestrian and bicycle access and use.
- Explore elevated transit or pedestrian corridor, particularly in the Resort Area in Anaheim.
- Partner with law enforcement agencies to improve safety at existing and future transit stops.

The KSW invitee list, invitation email, meeting agenda, PowerPoint presentation, information boards, sign-in sheet and meeting notes can be found in Appendix F.

OPEN HOUSES

OCTA hosted two Open Houses on March 30 and April 5, 2017 to provide the public with a Study update and an opportunity to ask questions and provide feedback. The notification approach used for Phase 1 was duplicated for this round of meetings. With the addition of mailing notices to those owner/occupants located in proximity to the Lemon Ave./Anaheim Blvd. and Katella Ave. corridor options.

E-Blasts/Social Media

The electronic version of the flyer and online survey link was distributed via OCTA's *On the Move* Blog to more than 3,000 email contacts included in OCTA's stakeholder database. The notice was sent out two times: the first notice was shared over one month in advance of the start of the Open Houses on February 18, the second meeting notice was distributed again on March 21 as a reminder for the following week's meeting in Garden Grove. A separate e-blast to the Harbor database's 4,800 contacts comprised of past survey respondents, Anaheim Rapid Connection contacts and bus customers was distributed on March 22 and April 11.

Facebook ads were also created utilizing images of proposed transit technologies and key destinations. The ads linked back to information on the open houses and later to the online

survey. More than 6,000 stakeholders had access to the ads and more than 320 users “clicked” for more information.

Copies of the meeting notices, flyers and emails blasts can be found in Appendix G.

Meeting Format

The two Open Houses took place from 5:00 to 7:00 p.m. and featured a large roll out of the (satellite) image of the corridor. Presentation boards focusing on the four route alignments and transit technologies were displayed and a comment station offered stakeholders the opportunity to complete the online survey, and/or a paper/electronic comment form. A presentation was provided and brief question and answer session took place. Team members were available to engage with stakeholders one-on-one throughout the meeting. Additionally, attendees were encouraged to indicate route, transit mode and origin/destination preferences using colored dot stickers; they were also invited to leave notes on the roll out for any location specific issues the study team should consider.

Unique to the meeting offered in Anaheim, a copy of the Anaheim City Council resolution opposing streetcar technology was available for stakeholders to review.

Since a presentation was provided, a Spanish language translator was available to assist non-English speakers. Approximately 25 stakeholders attended the meetings.

A virtual meeting was made available following the meetings via the OCTA website and featured the full complement of information boards and a presentation. Open House location information is shown below.

Open House Locations

Community	Date	Location/Address
Garden Grove	Thursday, March 30, 2017	Garden Grove Community Center 11300 Stanford Ave. Garden Grove, CA
Anaheim	Wednesday, April 5, 2017	Anaheim City Hall West Gordon Hoyt Conf. Rm. 201 S. Anaheim Blvd. Anaheim, CA

ONLINE SURVEY

Given the levels of response received during Phase 1 Outreach to the online survey, two surveys were developed for Phase 2 to share information about route and transit technology choice and solicit feedback. Two surveys were offered, a shorter version and a longer, more technical version that stakeholders could self-select based on their level of interest and time. A link to the online survey was shared via the open house notification efforts mentioned above, the study website, email blasts, on tablets at the open house meetings, rideshare coordinators for large employers, and Facebook ads. Online survey information was also shared with OCTA's Citizens Advisory Committee and Diversity Community Leaders Group during outreach presentations to both groups.

Survey Results

The survey garnered 683 responses, with 518 people completing the short survey and 165 respondents for the long survey. The overwhelming majority believe that transit should be improved and were evenly split between streetcar and bus, however rapid streetcar stood out as most preferred, as did the Harbor long route option.

Topic	Responses		
Mode preference	Rapid Streetcar (24%)	Enhanced Bus (20%)	Bus Rapid Transit (17%)
Route Preference	Harbor from Westminster Ave. to Chapman Ave (37%)	Harbor/Anaheim/Lemon (20%)	Harbor/Katella/Anaheim/Lemon (19%)
Most important transit characteristics (Able to choose multiple)*	Frequency of service (68%)	Hours of Operation (49%)	Overall Travel Time (41%)
How often transit is used	Never but would consider if improved (38%)	Daily (20%)	Weekly (9%)
Why travel along Harbor?	Work (26%)	Live (24%)	Commute (14%)
Major activities participated within the study area (Able to choose multiple)*	Dining (73%)	Working (63%)	Shopping/Recreational Activities (58%)

*Percentage of total respondents.

A copy of the online survey and survey results are provided in Appendix H.

TRANSIT USER OUTREACH

Transit users, especially those reliant on bus service, may face unique challenges to attend an open house meeting. To raise awareness for the Study and gather their valuable perspective on improving transit along the Harbor Blvd. Corridor, additional in person outreach was conducted on board several buses serving Harbor Blvd. and at the Fullerton Metrolink Station and ARTIC. Bus outreach was also supported by bilingual staff in Spanish and Vietnamese, study information shared and online surveys were completed.

ADDITIONAL OUTREACH

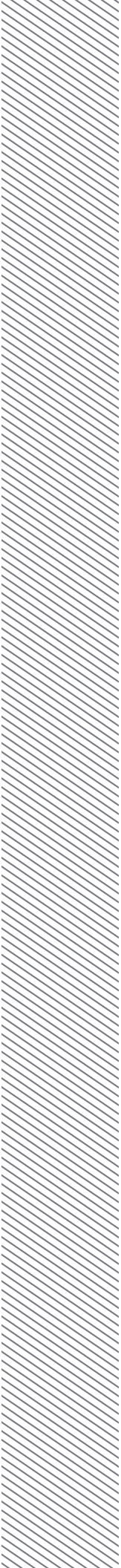
To supplement the programmed outreach activities, OCTA also provided briefings and presentations to interested stakeholders and organizations. The following activities took place during Phase 2 outreach, from January through July 2017.

Date	Organization
January 15, 2017	Anaheim City Council
February 28, 2017	Garden Grove City Council
March 9, 2017	OCTA Diversity Community Leaders Group
March 22, 2017	Anaheim Resort Transportation Board of Directors
April 1, 2017	Garden Grove Open Streets Event
April 18, 2017	Santa Ana City Council
April 18, 2017	OCTA Citizen's Advisory Committee

IMPORTANT CONSIDERATIONS OF PHASE 2 PUBLIC FEEDBACK

Feedback from these activities yielded the following themes, some reiterated from Phase 1:

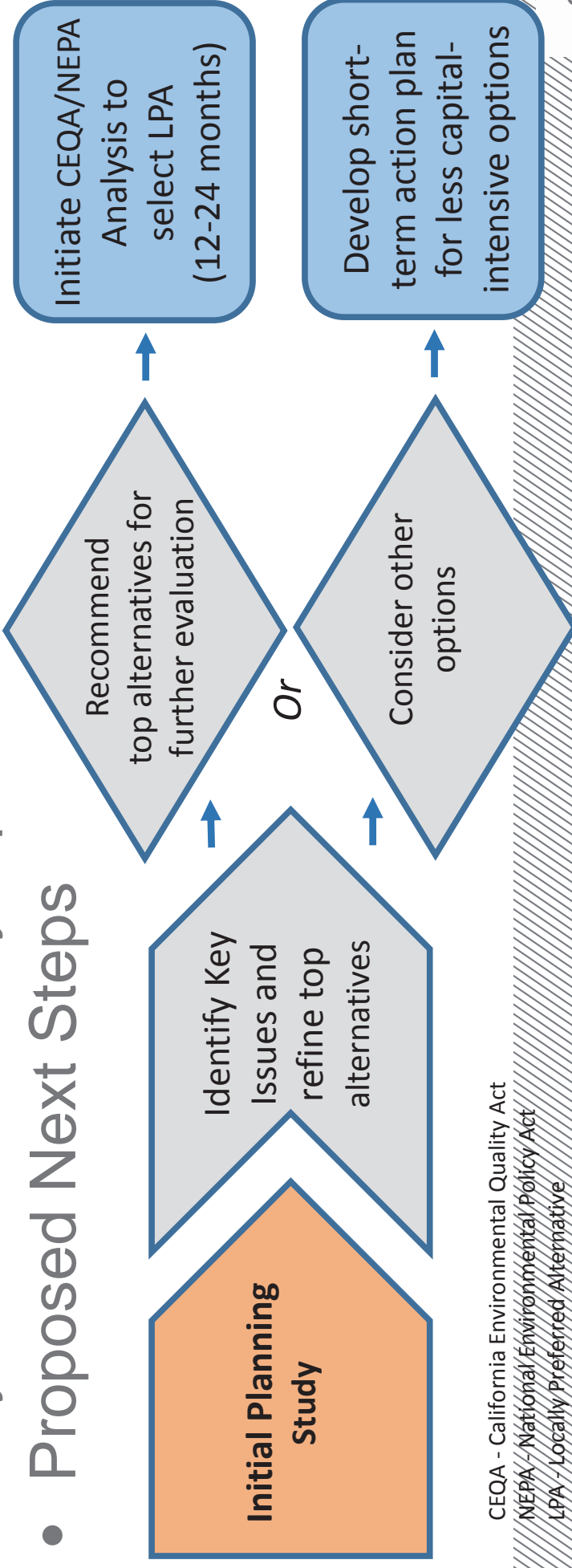
- Improve connectivity of transit services locally and regionally, first/last mile connection particularly important
- Maintain or improve pedestrian and bicycle access in the corridor
- Provide efficient linkages to key destinations
- Expand hours of service
- Concern regarding balancing stop amenities with homeless challenges
- Signal synchronization between jurisdictions to improve traffic flow for all vehicles
- Address congestion during peak times on Harbor Blvd., including long waits at intersections and behind buses, and east-west traffic flow
- Technology preference indicates significant interest in both streetcar and bus options
- Route preference focused on north-south connections



Central Harbor Boulevard Transit Corridor Study

Today's Update

- Performance Results for the 12 Alternatives
- City and Community Input Received to Date
- Proposed Next Steps



CEQA - California Environmental Quality Act
NEPA - National Environmental Policy Act
LPA - Locally Preferred Alternative

Study Phases and Schedule

- Purpose and Need August 2015 - December 2016
- Outreach 1 February - April 2016
- Alternatives Development February 2016 - April 2017
- Outreach 2 February - April 2017
- Alternatives Evaluation April - September 2017
- **Draft Final Report** December 2017
- Final Report Early 2018

Mode/Feature Options

Enhanced Bus



- Shares lanes with other cars
- Receives priority at traffic signals and uses bypass lanes at intersections
- Includes state-of-the-art stops with ticket machines
- Carries around 70 people
- Project Cost: \$

Bus Rapid Transit



- Includes all Enhanced Bus features, but travels on a dedicated bus-only lane
- Carries around 120 people in a longer, 60-foot bus
- Project Cost: \$\$

Streetcar



- Shares lanes with cars but travels on its own track embedded in the road
- Powered by overhead wires
- Includes modern stops with ticket machines and allows riders to board from front or rear doors
- Carries up to 150 people (3x as much as regular buses)
- Project Cost: \$\$\$

“Rapid” Streetcar

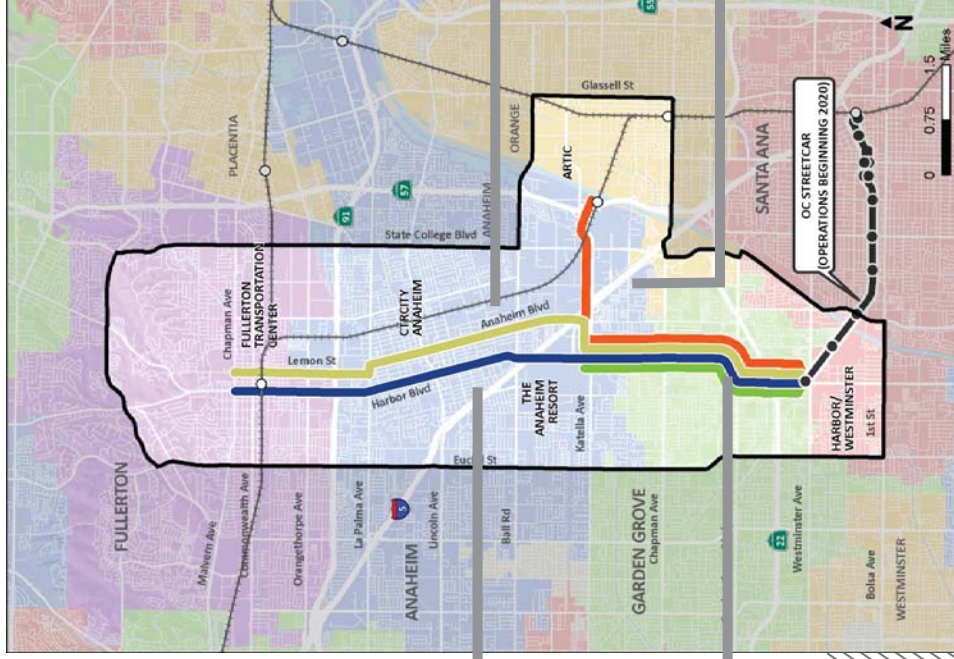


- Includes all Streetcar features, but uses a dedicated streetcar-only lane
- Faster than a regular streetcar or bus
- Project Cost: \$\$\$

12 Conceptual Alternatives

HARBOR LONG

- H-2: Harbor Long Streetcar
- H-3: Harbor Rapid Streetcar
- H-4: Harbor Enhanced Bus
- H-5: Harbor Bus Rapid Transit (BRT)



ANAHEIM/LEMON

- L-1: Anaheim/Lemon Streetcar
- L-2: Anaheim/Lemon Rapid Streetcar
- L-3: Anaheim/Lemon Enhanced Bus
- L-4: Anaheim/Lemon BRT

KATELLA

- K-1: Katella Streetcar
- K-2: Katella + Anaheim/Lemon Enhanced Bus
- K-3: Katella + Harbor Hybrid

HARBOR SHORT

- H-1: Harbor Short Streetcar

Evaluation Criteria

- Transit Performance (20%)
- Land Use (15%)
- Connectivity (18%)
- Constraints (15%)
- Mode Choices/User Experience (17%)
- Cost-Effectiveness (15%)
- City and Community Input (Qualitative)

Evaluation Scores

ALTERNATIVE	DESCRIPTION	Average Score					Total Score ²	
		Transit Performance	Land Use	Connectivity	Constraints	Choice/User Experience		Cost Effectiveness
H3	Harbor Rapid Streetcar ¹	18	11	14	7	14	11	74
H2	Harbor Long Streetcar	17	11	12	10	14	10	73
H5	Harbor BRT ^{1*}	17	11	12	8	12	14	73
L1	Anaheim-Lemon Streetcar	17	10	12	8	13	8	68
L4	Anaheim-Lemon BRT ^{1*}	14	11	12	6	12	12	66
L2	Anaheim-Lemon Rapid Streetcar ¹	15	10	14	5	14	8	65
K1	Harbor-Katella Streetcar*	16	11	10	11	12	6	65
H1	Harbor Short Streetcar*	17	9	8	13	10	8	64
K2	Katella + Anaheim-Lem Enhanced Bus	7	11	11	11	7	11	57
L3	Anaheim-Lemon Enhanced Bus*	10	10	9	11	5	11	56
K3	Katella + Harbor Hybrid	9	11	11	10	9	7	56
H4	Harbor Enhanced Bus*	9	10	10	13	4	9	55

¹Operates in a dedicated transit lane for at least 50% of the alignment.

²Due to rounding, the total scores may not equal the sum of the category scores.

*Extends to MacArthur Boulevard, consistent with existing Bravo! Route 543 service area.

Technical Evaluation Summary

- Higher-capacity, higher-visibility modes offer significant ridership benefits and travel time improvements
 - Rapid streetcar, streetcar, and bus rapid transit
- Top five scoring alternatives:
 - H3 Harbor Rapid Streetcar
 - H2 Harbor Long Streetcar
 - H5 Harbor BRT
 - L1 Anaheim-Lemon Streetcar
 - L4 Anaheim-Lemon BRT

Technical Input on Alternatives

Key technical issues identified by city staff:

- Dedicated transit lanes
- Current and future street capacity (*Master Plan of Arterial Highways*)
- Center-running alignments with center stations – not supported
- Anaheim-Lemon as a viable transit corridor
- Underlying changes to bus service south of Westminster Avenue
- Consideration of complete streets concepts/avoidance of impacts to bike lanes

Council Input on Alternatives

- **Fullerton** –Requested a council presentation for January 2018
- **Anaheim** – Adopted Resolution in January 2017 stating opposition to a streetcar system
- **Garden Grove** – Council presentation provided in February, and general support for the study was noted
- **Santa Ana** – Council presentation provided in April, and general support for the study was noted

Community Input



Online Surveys

OCTA is exploring opportunities to improve mobility in and around Harbor Boulevard as part of the Central Harbor Boulevard Transit Corridor Study. In partnership with Santa Ana, Garden Grove, Anaheim and Fullerton, OCTA has identified 12 different options to improve transit service in the area. We need your help to narrow down the best options for transit in and around Harbor Boulevard!

Help us know which options you like best.

1. If you would like to know which option best matches your needs for improving service in the Harbor Boulevard area, please take this quick 2-minute survey.

2. In this questionnaire, you will provide feedback on how each option should be evaluated, what features are important, and how each vehicle and route should be ranked. This questionnaire will take you approximately 15 minutes to complete.

WHAT TRANSIT ALTERNATIVE ARE YOU??

CENTRAL HARBOR BLVD TRANSIT CORRIDOR STUDY QUESTIONNAIRE

Open House Information

Thursday, March 30
5 to 7 p.m. (Brief presentation at 5:30 p.m.)
Garden Grove Community Center
13305 Stanford Ave. Garden Grove 92640

Wednesday, April 5
5 to 7 p.m. (Brief presentation at 5:30 p.m.)
Garden Hwy Conference Room
203.5 Anaheim Blvd. 2nd Floor
Anaheim, CA 92805

Special accommodations and translations are available to the public by calling (714) 860-5607. Requests must be made within 7 days of the scheduled meeting.

Asociaciones especializadas y traducciones están disponibles para el público. Llámennos al (714) 860-5607. Los solicitudes deben hacerse 7 días antes de la reunión de la reunión programada.

특수 서비스와 언어 지원은 사전에 신청을 받으실 수 있습니다. 신청은 회의 시작 7일 전까지 이루어져야 합니다.

Can't make a meeting? We'll send you a survey link to complete at home.

Can't make a meeting? We'll send you a survey link to complete at home.

STAY CONNECTED

GET CONNECTED

SIGN UP FOR UPDATES AND ALERTS

SUBMIT GENERAL COMMENTS

Help Us Improve Harbor Boulevard

Help Us Improve Harbor Boulevard

Can't make a meeting? We'll send you a survey link to complete at home.

Can't make a meeting? We'll send you a survey link to complete at home.

Ayudenos a Mejorar Harbor Boulevard

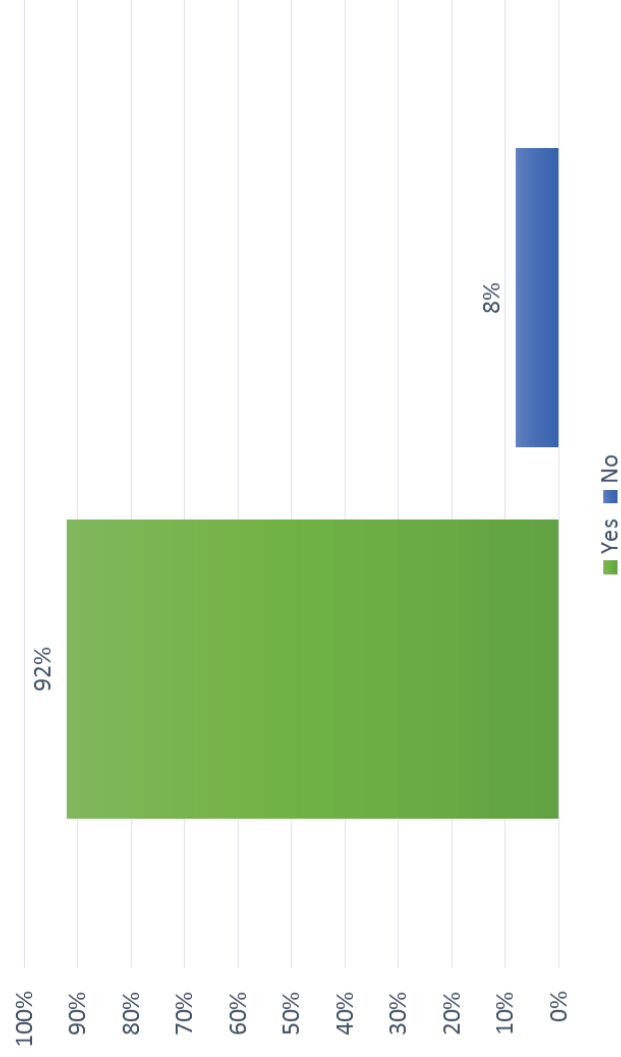
Ayudenos a Mejorar Harbor Boulevard

¿No puede asistir a la reunión? We'll send you a survey link to complete at home.

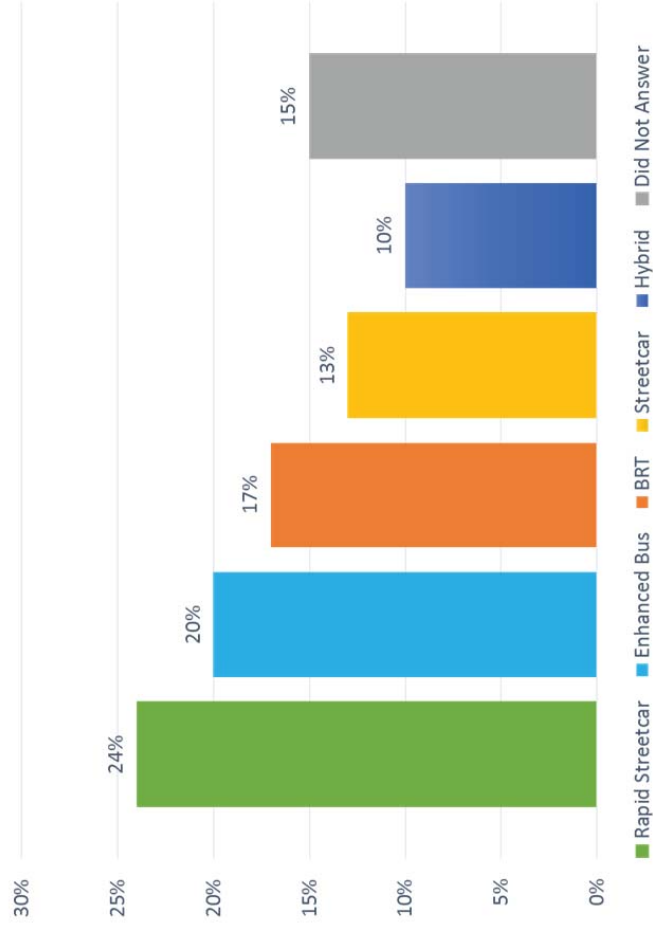
¿No puede asistir a la reunión? We'll send you a survey link to complete at home.

Online Survey

Improvements to Transit Desired

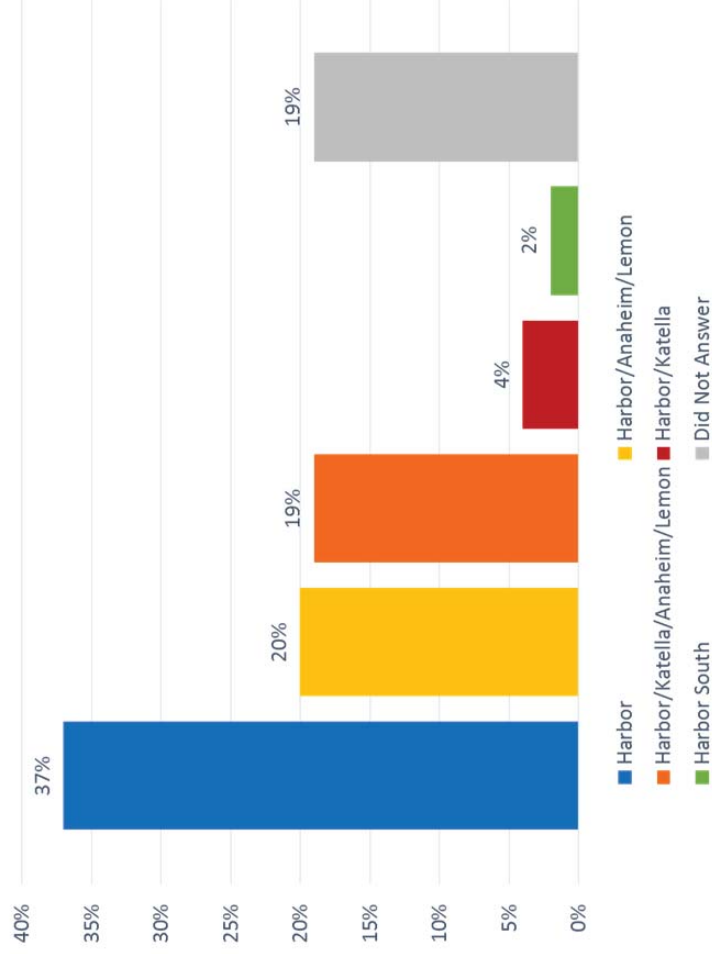


Mode Preference



Online Survey

Route Preference



Most Preferred Transit Characteristics

- Frequency of Service (68%)
- Hours of Operation (49%)
- Overall Travel Time (41%)
- Stop Locations (29%)
- Cost to Ride (28%)
- Real-Time Information (24%)

Next Steps

- A. Offer council presentations to each of the corridor cities for further input
- B. Continue to work with corridor cities technical staff to identify key issues for any subsequent efforts
- C. Finalize the report and incorporate feedback received from the cities, stakeholders, and public; and report feedback to the Board of Directors