



# **AGENDA**

## ***Transit Committee Meeting***

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### **Committee Members**

Andrew Do, Chairman  
Gregory T. Winterbottom, Vice Chairman  
Laurie Davies  
Steve Jones  
Miguel Pulido  
Tim Shaw  
Harry S. Sidhu

Orange County Transportation Authority  
Headquarters  
Conference Room 07  
550 South Main Street  
Orange, California  
**Thursday, June 11, 2020 at 9:00 a.m.**

Any person with a disability who requires a modification or accommodation in order to participate in this meeting should contact the OCTA Clerk of the Board, telephone (714) 560-5676, no less than two (2) business days prior to this meeting to enable OCTA to make reasonable arrangements to assure accessibility to this meeting.

Agenda descriptions are intended to give members of the public a general summary of items of business to be transacted or discussed. The posting of the recommended actions does not indicate what action will be taken. The Committee may take any action which it deems to be appropriate on the agenda item and is not limited in any way by the notice of the recommended action.

All documents relative to the items referenced in this agenda are available for public inspection at [www.octa.net](http://www.octa.net) or through the Clerk of the Board's office at the OCTA Headquarters, 600 South Main Street, Orange, California.

### **Guidance for Public Access to the Board of Directors/Committee Meeting**

On March 12, 2020 and March 18, 2020, Governor Gavin Newsom enacted Executive Orders N-25-20 and N-29-20 authorizing a local legislative body to hold public meetings via teleconferencing and make public meetings accessible telephonically or electronically to all members of the public to promote social distancing due to the state and local State of Emergency resulting from the threat of Novel Coronavirus (COVID-19).

In accordance with Executive Order N-29-20, and in order to ensure the safety of the Orange County Transportation Authority (OCTA) Board of Directors (Board) and staff and for the purposes of limiting the risk of COVID-19, in-person public participation at public meetings of the OCTA will not be allowed during the time period covered by the above-referenced Executive Orders. Instead, members of the public can listen to AUDIO live streaming of the Board and Committee meetings by clicking the below link:

<http://www.octa.net/About-OCTA/Who-We-Are/Board-of-Directors/Live-and-Archived-Audio/>



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## **Guidance for Public Access to the Board of Directors/Committee Meeting (Continued)**

Public comments may be submitted for the upcoming Board and Committee meetings by emailing them to [boardofdirectors@octa.net](mailto:boardofdirectors@octa.net).

If you wish to comment on a specific agenda Item, please identify the Item number in your email. All public comments that are timely received will be part of the public record and distributed to the Board. Public comments will be made available to the public upon request.

In order to ensure that staff has the ability to provide comments to the Board Members in a timely manner, please submit your public comments **30 minutes prior to the start time of the Board and Committee meeting date.**

### **Call to Order**

### **Roll Call**

### **Pledge of Allegiance**

Committee Chair Do

#### **1. Public Comments**

### **Special Calendar**

There are no Special Calendar matters.

### **Consent Calendar (Items 2 through 5)**

All items on the Consent Calendar are to be approved in one motion unless a Committee Member or a member of the public requests separate action or discussion on a specific item.

#### **2. Approval of Minutes**

Approve the minutes of the Transit Committee meeting of May 14, 2020.





**3. Cooperative Agreement with the City of Fullerton for the Fullerton Transportation Center Stair Replacement Project**

Lora Cross/James G. Beil

**Overview**

The Orange County Transportation Authority proposes to enter into a cooperative agreement with the City of Fullerton to define roles, responsibilities, and funding for the Fullerton Transportation Center Stair Replacement Project.

**Recommendations**

- A. Authorize the use of \$1,295,000 in Federal Transit Administration Section 5337 State of Good Repair Program funds for the Fullerton Transportation Center Stair Replacement Project.
- B. Authorize staff to process all necessary amendments to the Federal Transportation Improvement Program and execute or amend all necessary agreements to facilitate the above actions.
- C. Authorize the Chief Executive Officer to negotiate and execute Cooperative Agreement No. C-0-2266 between the Orange County Transportation Authority and the City of Fullerton to define roles, responsibilities, and funding for the Fullerton Transportation Center Stair Replacement Project.



**4. Amendment to Agreement with First Transit, Inc., for the Provision of Contracted Fixed-Route Service**  
Beth McCormick/Jennifer L. Bergener

**Overview**

On March 23, 2015, the Orange County Transportation Authority Board of Directors approved an agreement with First Transit, Inc., for the management and operation of contracted fixed-route service, which was extended through May 31, 2021. On March 23, 2020, as a result of the novel coronavirus pandemic, OC Bus fixed-route service was reduced to Sunday service levels seven days a week. This temporary, emergency action reduced the amount of service provided by First Transit, Inc. under this agreement by more than 50 percent. First Transit, Inc. has requested financial relief to cover expenses incurred related to employees and operations as the result of the novel coronavirus pandemic through June 13, 2020. The Coronavirus Aid, Relief, and Economic Security Act of 2020, specifically provides for this relief with guidance from the Federal Transit Administration. Staff requests approval of an amendment to the agreement with First Transit, Inc., to provide financial relief for costs related to the coronavirus pandemic through June 13, 2020, in an amount estimated to be \$1,750,555.

**Recommendation**

Authorize the Chief Executive Officer to negotiate and execute Amendment No. 10 to Agreement No. C-4-1737 between the Orange County Transportation Authority and First Transit, Inc., to allow reimbursement of specific expenses related to the novel coronavirus pandemic on a pass-through basis estimated to be \$1,750,555, for the period March 23 through June 13, 2020.



**5. Amendment to Agreement with MV Transportation, Inc., for the OC ACCESS Service**

Jack Garate/Jennifer L. Bergener

**Overview**

On July 1, 2013, the Orange County Transportation Authority Board of Directors approved an agreement with MV Transportation, Inc., for the management and operation of OC ACCESS service, which was subsequently extended through June 30, 2021. On March 19, 2020, the Governor issued a stay-at-home order in response to the novel coronavirus, which resulted in a significant decrease in OC ACCESS ridership. Staff requests an extension of the existing agreement through December 31, 2021, to allow time for the Orange County Transportation Authority to evaluate the novel coronavirus impact on the OC ACCESS service and to provide prospective proposers sufficient time to review and respond to a request for proposals.

**Recommendation**

Authorize the Chief Executive Officer to execute Amendment No. 9 to Agreement No. C-2-1865 between the Orange County Transportation Authority and MV Transportation, Inc., in the amount of \$24,377,535, to extend the term of the agreement for an additional six months to operate the OC ACCESS service through December 31, 2021. This will increase the maximum obligation amount of the agreement to \$375,620,065.

## **Regular Calendar**

**6. OC Streetcar Project Quarterly Update**

Mary Shavalier/James G. Beil

**Overview**

The Orange County Transportation Authority is currently implementing the OC Streetcar project. Updates are provided to the Board of Directors on a quarterly basis. This report provides an update on OC Streetcar project activities from March 2020 through May 2020.

**Recommendation**

Receive and file as an information item.



**7. Bus Operations Performance Measurements Report for the Third Quarter of Fiscal Year 2019-20**

Johnny Dunning, Jr./Jennifer L. Bergener

**Overview**

The Orange County Transportation Authority operates fixed-route bus and demand-response paratransit service throughout Orange County and into neighboring counties. The established measures of performance for these services assess the safety, courtesy, reliability, and overall quality of these services. This report summarizes the year-to-date performance of these services through the third quarter of fiscal year 2019-20.

**Recommendation**

Receive and file as an information item.

**8. Fullerton Park-and-Ride Joint Development Study**

Sam Sharvini/Kia Mortazavi

**Overview**

The Orange County Transportation Authority initiated a joint development study in summer 2018 to identify opportunities for enhancing the vitality of the Fullerton Park-and-Ride facility. This study identified financially feasible development opportunities that complement surrounding land-uses, support transit ridership, and preserve enough parking to support rideshare needs. Study findings and next steps are presented for Board of Directors' information.

**Recommendation**

Receive and file as an information item.



**9. Zero-Emission Bus Rollout Plan**

Gary Hewitt/Kia Mortazavi

**Overview**

The Orange County Transportation Authority has developed a draft plan to comply with the California Air Resources Board's Innovative Clean Transit regulation. The regulation requires transit agencies to gradually transition to a 100 percent zero-emission bus fleet by 2040, by phasing in the purchase of zero-emission buses as part of future bus procurements beginning in 2023. The regulation also requires transit agencies to submit a Zero-Emission Bus Rollout Plan and an accompanying resolution to the California Air Resources Board by July 1, 2020.

**Recommendations**

- A. Direct staff to finalize the Zero-Emission Bus Rollout Plan and submit a final report to the California Air Resources Board as required for compliance purposes.
- B. Adopt Orange County Transportation Authority Resolution No. 2020-055 authorizing the Chief Executive Officer, or designee, to authorize the submittal of the Zero-Emission Bus Rollout Plan to the California Air Resources Board as required by the Innovative Clean Transit regulation.
- C. Direct staff to continue battery-electric and hydrogen fuel-cell electric bus pilot projects and return with periodic performance reports that will be used for future plan updates.

**Discussion Items**

**10. Chief Executive Officer's Report**

**11. Committee Members' Reports**

**12. Closed Session**

There are no Closed Session items scheduled.

**13. Adjournment**

The next regularly scheduled meeting of this Committee will be held at **9:00 a.m. on Thursday, July 9, 2020**, at the Orange County Transportation Authority Headquarters, Conference Room 07, 550 South Main Street, Orange, California.



# **MINUTES**

## ***Transit Committee Meeting***

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### **Committee Members Present Via Teleconference**

Andrew Do, Chairman  
Gregory T. Winterbottom, Vice Chairman  
Laurie Davies  
Steve Jones  
Miguel Pulido  
Tim Shaw  
Harry S. Sidhu

### **Staff Present**

Darrell E. Johnson, Chief Executive Officer  
Jennifer L. Bergener, Deputy Chief Executive Officer  
Laurena Weinert, Clerk of the Board  
Sara Meisenheimer, Deputy Clerk of the Board  
James Donich, General Counsel (teleconference)

### **Committee Members Absent**

None

## **Call to Order**

The May 14, 2020, regular meeting of the Transit Committee was called to order by Committee Chairman Do at 9:03 a.m.

## **Roll Call**

The Deputy Clerk of the Board conducted an attendance Roll Call and announced that there was a quorum of the Transit Committee.

## **Pledge of Allegiance**

Committee Chairman Do led in the Pledge of Allegiance.

### **1. Public Comments**

The Deputy Clerk of the Board stated that there were no public comments for this item; however, there was a public comment for Item 14.

## **Special Calendar**

There were no Special Calendar matters.

## **Consent Calendar (Items 2 through 13)**

### **2. Approval of Minutes**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to approve the minutes from the Transit Committee meeting of April 9, 2020.

Director Shaw was not present to vote on this item.

### **3. Agreement for Power Generator Replacement at the Anaheim and Irvine Construction Circle Bus Bases**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to:

- A. Find RT Contractor Corp., the apparent low bidder, as non-responsive for failure to sign and submit the Disclosure of Lobbying Activities form as required by the bid instructions, and for failure to submit Iran Contracting Act exemption documentation.
- B. Authorize the Chief Executive Officer to negotiate and execute Agreement No. C-0-2074 between the Orange County Transportation Authority and Global Power Group, Inc., the lowest responsive, responsible bidder, in the amount of \$1,374,200, for power generator replacement at the Anaheim and Irvine Construction Circle bus bases.
- C. Authorize the use of \$574,200, in additional Senate Bill 1, Chapter 5, Statutes of 2017, State of Good Repair funds for a total of \$1,374,200, to support the above recommendations.
- D. Authorize staff to process all necessary amendments to the Federal Transportation Improvement Program and execute or amend all necessary agreements to facilitate the above actions.

Director Shaw was not present to vote on this item.

**4. Agreement for Electric Vehicle Charging Stations at the Garden Grove and Santa Ana Bus Bases**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to authorize the Chief Executive Officer to negotiate and execute Agreement No. C-0-2071 between the Orange County Transportation Authority and Caliba, Inc., the lowest responsive, responsible bidder, in the amount of \$1,348,000, for electric vehicle charging stations at the Garden Grove and Santa Ana bus bases.

Director Shaw was not present to vote on this item.

**5. Agreement for Replacement of Heating and Ventilation Units at the Anaheim Bus Base Maintenance Building**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to authorize the Chief Executive Officer to negotiate and execute Agreement No. C-0-2083 between the Orange County Transportation Authority and F.M. Thomas Air Conditioning, Inc., the lowest responsive, responsible bidder, in the amount of \$482,033, for replacement of heating and ventilation units at the Anaheim Bus Base maintenance building.

Director Shaw was not present to vote on this item.

**6. Agreement for Bus Hoist Replacement at the Garden Grove and Irvine Construction Circle Bus Bases**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to authorize the Chief Executive Officer to negotiate and execute Agreement No. C-9-1814 between the Orange County Transportation Authority and Southwest Lift & Equipment, Inc., the lowest responsive, responsible bidder, in the amount of \$314,810, for bus hoist replacement at the Garden Grove and Irvine Construction Circle bus bases.

Director Shaw was not present to vote on this item.



**7. Agreement for Technical Consulting Services for a Next Generation Fare Collection System and OC Streetcar Ticket Vending Machines**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to:

- A. Approve the selection of Jacobs Engineering Group, Inc., as the firm to provide technical consulting services for the next generation fare collection system.
- B. Authorize the Chief Executive Officer to negotiate and execute Agreement No. C-0-2047 between the Orange County Transportation Authority and Jacobs Engineering Group, Inc., in the amount of \$870,000, for a three-year initial term with two, one-year option terms, to provide technical consulting services for the next generation fare collection system.

Director Shaw was not present to vote on this item.

**8. Amendment to Cooperative Agreements with Special Agencies for the Provision of Special Transportation Services**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to:

- A. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Cooperative Agreement No. C-8-1917 between the Orange County Transportation Authority and Acacia Adult Day Services, for continued services in the amount of \$626,620, and to adjust the per trip rate to \$16.49, effective July 1, 2020 through June 30, 2021. This will increase the maximum obligation of the agreement to a total contract value of \$1,302,621.
- B. Authorize the Chief Executive Officer to negotiate and execute Amendment No.1 to Cooperative Agreement No. C-8-1918 between the Orange County Transportation Authority and Alzheimer's Family Service Center, for continued services in the amount of \$610,130, and to adjust the per trip rate to \$16.49, effective from July 1, 2020 through June 30, 2021. This will increase the maximum obligation of the agreement to a total contract value of \$1,343,599.

**8. (Continued)**

- C. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Cooperative Agreement No. C-8-1919 between the Orange County Transportation Authority and Alzheimer's Orange County, for continued services in the amount of \$206,125, and to adjust the per trip rate to \$16.49 effective from July 1, 2020 through June 30, 2021. This will increase the maximum obligation of the agreement to a total contract value of \$566,323.
- D. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Cooperative Agreement No. C-8-1920 between the Orange County Transportation Authority and Community SeniorServ, for continued services in the amount of \$593,640, and to adjust the per trip rate to \$16.49 effective from July 1, 2020 through June 30, 2021. This will increase the maximum obligation of the agreement to a total contract value of \$1,362,793.
- E. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Cooperative Agreement No. C-8-1921 between the Orange County Transportation Authority and My Day Counts, for continued services in the amount of \$1,406,007, and to adjust the per trip rate to \$16.07, and the Regional Center of Orange County pass-through per trip rate to \$6.14 effective from July 1, 2020 through June 30, 2021. This will increase the maximum obligation of the agreement to a total contract value of \$3,111,668.

Director Shaw was not present to vote on this item.

**9. Amendment to Cooperative Agreements with Non-Profit Agencies to Provide Senior Mobility Program Services**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to:

- A. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 7 to Cooperative Agreement No. C-1-2490 between the Orange County Transportation Authority and Abrazar, Inc., in the amount of \$91,989, to provide funding through June 30, 2021.
- B. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 8 to Cooperative Agreement No. C-1-2491 between the Orange County Transportation Authority and Korean American Senior Association, in the amount of \$113,092, to provide funding through June 30, 2021.

**9. (Continued)**

- C. Authorize the Chief Executive Officer to negotiate and execute Amendment No. 6 to Cooperative Agreement No. C-1-2492 between the Orange County Transportation Authority and Southland Integrated Services, Inc., in the amount of \$99,441, to provide funding through June 30, 2021.

Director Shaw was not present to vote on this item.

**10. Sole Source Agreement for the Purchase of HASTUS Operations Scheduling Software Upgrade Version 2020**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to authorize the Chief Executive Officer to negotiate and execute sole source Agreement No. C-0-2001 between the Orange County Transportation Authority and GIRO, Inc., in the amount of \$1,360,799, for the upgrade of the HASTUS operations scheduling software from version 2013 to version 2020.

Director Shaw was not present to vote on this item.

**11. Sole Source Agreements for the Purchase of Trapeze Software Group, Inc., Software Modules**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to:

- A. Authorize the Chief Executive Officer to negotiate and execute sole source Agreement No. C-0-2125 between the Orange County Transportation Authority and Trapeze Software Group, Inc., in the amount of \$104,356, for the sole source purchase and installation of the Trapeze DriverMate software module.
- B. Authorize the Chief Executive Officer to negotiate and execute sole source Agreement No. C-0-2126 between the Orange County Transportation Authority and Trapeze Software Group, Inc., in the amount of \$93,388, for the sole source purchase and installation of the Trapeze Eligibility Management and the Trapeze Service Infractions software modules.

Director Shaw was not present to vote on this item.

**12. Amendment to Cooperative Agreement with the Regional Center of Orange County**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Cooperative Agreement No. C-8-1735 between the Orange County Transportation Authority and the Regional Center of Orange County to exercise the first option term to share in the cost of paratransit services provided to Regional Center of Orange County consumers through June 30, 2022.

Director Shaw was not present to vote on this item.

**13. Amendment to Agreement for Mobility Management Services**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 6-0, to authorize the Chief Executive Officer to negotiate and execute Amendment No. 1 to Agreement No. C-9-1244 between the Orange County Transportation Authority and Mobility Management Partners, Inc., in the amount of \$735,084, to exercise the option term of the agreement and include additional travel training services, from August 1, 2020 to July 31, 2022. This will increase the maximum obligation of the agreement to a total contract value of \$983,995.

Director Shaw was not present to vote on this item.

## **Regular Calendar**

**14. Agreement for Operations and Maintenance Services for the OC Streetcar Project**

Jennifer L. Bergener, Deputy Chief Executive Officer and Chief Operating Officer, gave a PowerPoint presentation as follows:

- Background;
- Board Approved: Evaluation Criteria and Weights;
- Scoring Summary;
- Overview Cost; and
- Recommendation.

Ms. Bergener noted that on Page 10, paragraph three of the Staff Report, an error was made, and the corrected version is as follows:

“Herzog’s overall price of \$82,918,863, is within ~~one~~ 2.6 percent of OCTA’s independent cost estimate and thus is considered fair and reasonable.”

**14. (Continued)**

A motion was made by Director Davies, seconded by Director Sidhu, and following a roll call vote, declared passed 5-0, to:

- A. Approve the selection of Herzog Transit Services, Inc. as the firm to provide operations and maintenance services for the OC Streetcar Project.
- B. Authorize the Chief Executive Officer to negotiate and execute Agreement No. C-8-2039 between the Orange County Transportation Authority and Herzog Transit Services, Inc., in the amount of \$45,065,590, for operations and maintenance services for the OC Streetcar Project for an initial start-up and pre-revenue period, and a five-year revenue term, with two, two-year option terms.

Director Shaw was not present to vote on this item.

Due to the Levine Act, Committee Chairman Do recused himself and did not participate or vote on this item.

**15. June 2020 Bus Service Change**

Gary Hewitt, Transit Planning Manager, reported on the bus service change timelines, the reasons for current decrease in service, why service was changed to Sunday service, and strategies to increase service in June to Saturday service level on the weekdays that does not require a public hearing. Mr. Hewitt also highlighted how the bus customers will be notified of the June service changes.

A discussion ensued regarding:

- The rear door hand sanitizers' stations were installed in all fixed-route buses as of Monday morning.
- OCTA's two-part strategy to go from a Saturday bus service weekday schedule were highlighted.
- Concerns about the economy opening too soon, the tough decisions ahead, and the level of service being increased should be based on the Governor's direction.
- Ridership demand and service levels will be a standing item at the Transit Committee.
- The Federal Transit Administration has been very flexible with Title VI and is not requiring a complete Title VI analysis during this interim.
- Passenger demand has been adjusted due to social distancing requirements.

**15. (Continued)**

- OCTA is monitoring the level of service through the automatic passenger counters on the rear doors, the coach operators informing management of loads exceeding numbers, and adding trips at peak times.
- Director Pulido thanked Committee Chairman Do and staff for the discussion and suggested to have more conversations with the Governor/City Mayors since some of the guidelines may be too difficult to attain.

Following the discussion, no action was taken on this receive and file information item.

## **Discussion Items**

**16. Fiscal Year 2020-21 Budget Workshop Follow up**

Andrew Oftelie, Chief Financial Officer, summarized the handout that resulted from the May 11, 2020 Board of Directors (Board) budget workshop, highlighted the three pie charts in question one of the handout, and how the budget changed as a result of the novel coronavirus pandemic.

**17. Chief Executive Officer's Report**

Darrell E. Johnson, Chief Executive Officer (CEO), reported on the following:

- On Tuesday, May 12<sup>th</sup>, the fourth virtual CEO Connection was conducted using Microsoft Teams and there were nearly 400 participants. Administrative staffs' questions were answered and updated on the "Return to the Workplace" plan in conjunction with local and state guidelines.
- On Wednesday, May 20<sup>th</sup> at 6:00 p.m., a telephone townhall will be scheduled to connect with coach operators and maintenance employees at the bases.

**18. Committee Members' Reports**

Committee Chairman Do stated he has been encouraging the executives at the County of Orange and various agencies to use their working at home experience to create a matrix. He hopes the Orange County Transportation Authority is also keeping track to allow the Board to interpret the productivity among staff without affecting the overall financial wellbeing.



**18. (Continued)**

Darrell E. Johnson, CEO, stated in late 2018 and early 2019, a small remote “work at home,” pilot program began with 30 participants and the feedback was very positive. Currently, there are nearly 500 people logging in everyday and 1,100 meetings created within the last month using Microsoft Teams.

Director Davies echoed Committee Chairman Do’s remarks and suggested that the teleconference meetings should be considered for the future.

**19. Closed Session**

There were no Closed Session items scheduled.

**20. Adjournment**

The meeting adjourned at 9:49 a.m.

The next regularly scheduled meeting of this Committee will be held at **9:00 a.m. on Thursday, June 11, 2020**, at the Orange County Transportation Authority Headquarters, Conference Room 07, 550 South Main Street, Orange, California.

ATTEST

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Andrew Do  
Committee Chairman

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Sahara Meisenheimer  
Deputy Clerk of the Board



**June 11, 2020**

**To:** Transit Committee

**From:** Darrell E. Johnson, Chief Executive Officer

**Subject:** Cooperative Agreement with the City of Fullerton for the Fullerton Transportation Center Stair Replacement Project

### **Overview**

The Orange County Transportation Authority proposes to enter into a cooperative agreement with the City of Fullerton to define roles, responsibilities, and funding for the Fullerton Transportation Center Stair Replacement Project.

### **Recommendations**

- A. Authorize the use of \$1,295,000 in Federal Transit Administration Section 5337 State of Good Repair Program funds for the Fullerton Transportation Center Stair Replacement Project.
- B. Authorize staff to process all necessary amendments to the Federal Transportation Improvement Program and execute or amend all necessary agreements to facilitate the above actions.
- C. Authorize the Chief Executive Officer to negotiate and execute Cooperative Agreement No. C-0-2266 between the Orange County Transportation Authority and the City of Fullerton to define roles, responsibilities, and funding for the Fullerton Transportation Center Stair Replacement Project.

### **Discussion**

An existing pedestrian overhead bridge facilitates the transfer of passengers between the eastbound and westbound station platforms at the Fullerton Transportation Center (FTC) Metrolink Station. The bridge is connected to the platforms by a set of elevators and staircases on each end. The staircases are structural steel systems with concrete infill within landings and stair treads. The staircases were inspected by a structural engineer and were determined to be unsafe and not in a state of good repair. Significant corrosion of the metal



staircase risers and stair pans has occurred from exposure to the environment and weather over time. The FTC Metrolink Station is served by both Amtrak and Metrolink passenger trains with as many 2,400 daily boardings and alightings. The staircases are important facilities to ensure efficient passenger movement at the station, particularly during peak periods.

In November 2019, the City of Fullerton (City) requested funding from the Orange County Transportation Authority (OCTA) for replacement of the stairs at the FTC Metrolink Station. Although maintenance of the stairs is the responsibility of the City, OCTA's participation in the FTC Stair Replacement Project (Project) will protect the investment already made at the FTC and OCTA's ongoing investment in the Metrolink system.

On April 1, 2020 the City completed the plans, specifications, and estimates for replacement of the stair system's pans, landings, and risers. OCTA proposes to enter into a cooperative agreement with the City to determine the roles and responsibilities for the replacement of the FTC pedestrian bridge staircases.

OCTA will allocate funding and be the lead agency for the construction phase of the Project, including construction management. The City will provide engineered and approved plans ready to be permitted, as well as all required City inspections and right-of-way. The City will also maintain the stairs after completion of the Project.

The Fixing America's Surface Transportation (FAST) Act provides transportation funding for federal fiscal year (FFY) 2015-16 through FFY 2019-20. Under the FAST Act, the Federal Transit Administration (FTA) makes federal formula funds available through four major funding programs, including the Section 5337 State of Good Repair Program (Section 5337). OCTA anticipates receiving \$18,782,528 in FTA Section 5337 funds for FFY 2019-20. Funds are split between rail and bus projects based on the formula used to calculate the revenues.

On October 14, 2019, the OCTA Board of Directors (Board) approved the FFY 2019-20 FTA Section 5337 funds for Southern California Regional Rail Authority (SCRRA) rehabilitation projects. While the Project is not led by SCRRA, it does support the funding program's purpose and the Board-approved Capital Programming Policies (CPP) of utilizing Section 5337 funds to maintain facilities and keep the commuter rail system in a state of good repair. Section 5337 funding levels provide adequate funding for SCRRA rehabilitation projects in addition to replacing the staircases at the FTC.

Staff is requesting approval from the Board to program \$1,295,000 in FFY 2019-20 FTA Section 5337 funds for the construction phase of the Project.

The use of Section 5337 funds for commuter rail rehabilitation projects is consistent with the Board-approved CPP. These construction funds will complement the City funds of \$35,000 for the design phase and will provide full funding, in the amount of \$1,330,000, for the Project. Attachment A provides the updated Capital Funding Plan, which includes funding information for OCTA capital projects as well as the recommended funding changes.

***Summary***

Staff requests approval from the Board of Directors to program \$1,295,000 in Federal Transit Administration Section 5337 State of Good Repair Program funds for the Fullerton Transportation Center Stair Replacement Project. Staff requests authorization to process all necessary amendments to the Federal Transportation Improvement Program and for executing or amending all necessary funding agreements to reprogram the funds. Staff also requests authorization for the Chief Executive Officer to negotiate and execute Cooperative Agreement No. C-0-2266 with the City of Fullerton to define roles, responsibilities, and funding for the replacement of the stairs at the Fullerton Transportation Center and to program funds for the construction phase of the project.

***Attachment***

A. Capital Funding Program Report

**Prepared by:**



Lora Cross, PMP  
Project Manager  
(714) 560-5788



Virginia Abadessa  
Director, Contracts Administration and  
Materials Management  
(714) 560-5623

**Approved by:**



James G. Beil, P.E.  
Executive Director, Capital Programs  
(714) 560-5646



# Capital Funding Program Report

Pending Board of Directors (Board) Approval - June 22, 2020

Rail Project											
Project Title	M Code	Total Funding	Federal Funds			State Funds			Local Funds		
			STBG/CMAQ	FTA	Other Fed.	STIP	SB1	Other State	M1	M2	Other Local
Fullerton Transportation Center parking expansion	M1/R	\$33,667				\$11,250		\$11,035	\$9,718		\$1,664
Orange Transportation Center parking structure	M1/R	\$31,003	\$2,555	\$2,644		\$13,762			\$1,850	\$420	\$9,772
Sand Canyon Avenue grade separation	M1/R	\$62,050	\$10,536					\$28,192	\$3,116	\$5,352	\$14,854
OC Streetcar (New Starts)	M1/S	\$408,160	\$54,465	\$162,213				\$25,518		\$165,964	
OC Streetcar preliminary studies and environmental	M1/S	\$7,014		\$341					\$4,977	\$554	\$1,142
Anaheim Canyon Station improvements	R	\$29,900	\$26,132							\$2,000	\$1,768
Control Point at 4th Street	R	\$2,985		\$2,985							
Fullerton Transportation Center Stair Replacement	R	\$1,330		\$1,295							\$35
Future VSS	R	\$217		\$174							\$43
Laguna Niguel to San Juan Capistrano Passing Siding	R	\$36,360	\$25,056	\$1,015		\$3,000		\$6,734			\$555
Metrolink new capital	R	\$516		\$516							
Metrolink preventive maintenance capitalized operation - FY 2016-17 to FY 2023-24	R	\$65,374		\$65,374							
Metrolink rehabilitation/renovation - FY 2011-12 to FY 2023-24	R	\$169,802		\$169,802							
Metrolink station and track improvements, and rehabilitation	R	\$3,063		\$2,617							\$446
Orange Olive Wye Connection	R	\$16,000				\$16,000					
Placentia Commuter Rail Station	R	\$34,825	\$50			\$2,500		\$400		\$8,000	\$23,875
Positive Train Control (Metrolink)	R	\$39,916		\$4,492	\$1,234			\$34,190			
San Juan Creek Bridge replacement	R	\$38,333	\$472	\$35,714	\$913			\$59		\$1,175	
Slope stabilization Laguna Niguel-Lake Forest	R	\$5,168		\$4,834						\$334	
State College grade separation (LOSSAN)	R	\$79,284						\$46,000		\$33,284	
Ticket vending machines	R	\$6,857									\$6,857
VSS at Commuter Rail Stations	R	\$4,409		\$3,594				\$56			\$759
M2 Project S Transit extensions to Metrolink (Rubber Tire)	S	\$733								\$733	
<b>Rail Project Totals</b>		<b>\$1,076,966</b>	<b>\$119,266</b>	<b>\$457,610</b>	<b>\$2,147</b>	<b>\$46,512</b>		<b>\$152,184</b>	<b>\$19,661</b>	<b>\$217,816</b>	<b>\$61,770</b>
<b>Federal Funding Total</b>		<b>\$579,023</b>									
<b>State Funding Total</b>		<b>\$198,696</b>									
<b>Local Funding Total</b>		<b>\$299,247</b>									
<b>Total Funding (000's)</b>		<b>\$1,076,966</b>									

Rail Project Completed											
Project Title	M Code	Total Funding	Federal Funds			State Funds			Local Funds		
			STBG/CMAQ	FTA	Other Fed.	STIP	SB1	Other State	M1	M2	Other Local
Laguna Niguel-Mission Viejo Station parking improvements and expansion (ADA ramps)	M1/R	\$5,177	\$2,800	\$732					\$1,645		
Metrolink Grade Crossing Safety Improvements (OCX)	M1/R	\$80,618						\$18,250	\$7,600	\$30,710	\$24,058
Metrolink rolling stock	M1/R	\$158,009	\$42,230	\$35,390				\$36,300	\$44,089		
Metrolink Service Track Expansion	M1/R	\$119,957						\$51,399	\$68,558		



# Capital Funding Program Report

Pending Board of Directors (Board) Approval - June 22, 2020

Rail Project Completed											
Project Title	M Code	Federal Funds				State Funds			Local Funds		
		Total Funding	STBG/CMAQ	FTA	Other Fed.	STIP	SB1	Other State	M1	M2	Other Local
M2 Project S Fixed-Guideway Anaheim Rapid Connection	M1/S	\$9,924		\$1,516					\$6,000	\$1,286	\$1,122
Anaheim Regional Intermodal Transportation Center (ARTIC) construction	M1/T	\$184,164	\$33,250	\$37,253	\$3,501	\$29,219			\$43,900	\$35,291	\$1,750
Fullerton Transportation Station expansion planning, environmental PSR	M1/T	\$0	\$0						\$0		
Santa Ana grade separation planning and environmental PSR	M1/T	\$1,333	\$1,180						\$153		
Santa Ana Transportation Station planning and environmental PSR	M1/T	\$1,003	\$888						\$115		
17th Street grade separation environmental	R	\$2,476								\$2,476	
Control Point Stadium Crossover	R	\$6,490		\$3,245				\$3,245			
LOSSAN Corridor grade separations PSR in Anaheim, Orange, and Santa Ana	R	\$2,699								\$2,699	
Metrolink grade crossing safety improvements ROW	R	\$3,025								\$3,025	
North Beach crossings safety enhancements	R	\$348						\$166		\$182	
Rail Crossing signal lights and pedestrian gates	R	\$252						\$252			
Rail Station Platform safety improvements (Fullerton, Irvine, and Tustin)	R	\$553						\$553			
Safety repairs for San Clemente Pier Station	R	\$122						\$122			
San Clemente Beach Trail Crossings safety enhancements	R	\$4,999						\$2,170		\$2,251	\$578
Transit Rail Security (monitors, fencing, video surveillance)	R	\$163						\$163			
Go Local	S	\$7,730							\$7,730		
ARTIC environmental, ROW, program management support, site plan	M1	\$41,369							\$8,869		\$32,500
Fiber Optics installation (Metrolink)	M1	\$23,183		\$10,903				\$10,479	\$1,801		
Laguna Niguel-Mission Viejo Station parking expansion (south lot)	M1	\$4,135						\$695	\$3,440		
Tustin Rail Station parking expansion	M1	\$15,390				\$1,100		\$7,181	\$7,109		
<b>Rail Project Completed Totals</b>		<b>\$673,119</b>	<b>\$80,348</b>	<b>\$89,039</b>	<b>\$3,501</b>	<b>\$30,319</b>		<b>\$130,975</b>	<b>\$201,009</b>	<b>\$77,920</b>	<b>\$60,008</b>
<b>Federal Funding Total</b>		<b>\$172,888</b>									
<b>State Funding Total</b>		<b>\$161,294</b>									
<b>Local Funding Total</b>		<b>\$338,937</b>									
<b>Total Funding (000's)</b>		<b>\$673,119</b>									



# Capital Funding Program Report

## Pending Board of Directors (Board) Approval - June 22, 2020

### Board Actions:

1. Authorize the use of \$1,295,000 in Federal Transit Administration Section 5337 State of Good Repair Program funds for the Fullerton Transportation Center Stair Replacement project.

### Acronyms:

ADA - Americans with Disabilities Act  
CMAQ - Congestion Mitigation Air Quality Improvement Program  
FTA - Federal Transit Administration  
FY - Fiscal Year  
LOSSAN - Los Angeles-San Diego-San Luis Obispo Rail Corridor  
M Code - Project Codes in Measure M1 and M2  
M1 - Measure M1  
M2 - Measure M2  
OC - Orange County  
OCTA - Orange County Transportation Authority  
OCX - Rail-Highway Grade Crossing/Safety Enhancement Project  
PSR - Project Study Report  
ROW - Right-of-Way  
STBG - Surface Transportation Block Grant  
STIP - State Transportation Improvement Program  
VSS - Video Surveillance System



**June 11, 2020**

**To:** Transit Committee

**From:** Darrell E. Johnson, Chief Executive Officer

**Subject:** Amendment to Agreement with First Transit, Inc., for the Provision of Contracted Fixed-Route Service

### **Overview**

On March 23, 2015, the Orange County Transportation Authority Board of Directors approved an agreement with First Transit, Inc., for the management and operation of contracted fixed-route service, which was extended through May 31, 2021. On March 23, 2020, as a result of the novel coronavirus pandemic, OC Bus fixed-route service was reduced to Sunday service levels seven days a week. This temporary, emergency action reduced the amount of service provided by First Transit, Inc. under this agreement by more than 50 percent. First Transit, Inc. has requested financial relief to cover expenses incurred related to employees and operations as the result of the novel coronavirus pandemic through June 13, 2020. The Coronavirus Aid, Relief, and Economic Security Act of 2020, specifically provides for this relief with guidance from the Federal Transit Administration. Staff requests approval of an amendment to the agreement with First Transit, Inc., to provide financial relief for costs related to the coronavirus pandemic through June 13, 2020, in an amount estimated to be \$1,750,555.

### **Recommendation**

Authorize the Chief Executive Officer to negotiate and execute Amendment No. 10 to Agreement No. C-4-1737 between the Orange County Transportation Authority and First Transit, Inc., to allow reimbursement of specific expenses related to the novel coronavirus pandemic on a pass-through basis estimated to be \$1,750,555, for the period March 23 through June 13, 2020.

### **Discussion**

The Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020 specifies funds may be used to prevent, prepare for, and respond to the novel

coronavirus (COVID-19). With guidance from the Federal Transit Administration (FTA), this includes operating expenses defined as the costs necessary to operate, maintain, and manage a public transportation system, and other expenses such as driver salaries, fuel, and items having a useful life of less than one year, including personal protective equipment (PPE) and cleaning supplies.

Third-party contractors with more than 500 employees providing services on behalf of transit agencies are also eligible to receive CARES Act funds, working through the public transit agency.

Similar to the transit agency, contractor expenses covered by the CARES Act include salaries and benefits for contract employees on leave due to reduced service, provision of PPE and cleaning supplies, and other expenses related to maintaining a state of readiness so that the contractor can return to normal operation as necessary.

Under the federal guidance, transit agencies are permitted to modify existing contracts to pay for eligible expenses required to retain readiness through the CARES Act, even if service is reduced.

Prior to the March 23, 2020, reduction in OC Bus service in response to COVID-19, First Transit, Inc. (FT) provided approximately 40 percent of the total 1.6 million annual revenue vehicle hours for the system. With the implementation of the Sunday service schedule seven days a week, the amount of service provided by FT was reduced by more than 50 percent. This resulted in FT modifying their work plan, which included placing a portion of the staff on a furlough status, purchasing and distributing PPE, and enhanced cleaning/disinfecting for vehicles and employee work areas to help prevent the spread of COVID-19.

As a result, FT is requesting relief from the Orange County Transportation Authority (OCTA) as provided through the CARES Act. Staff met with FT to identify and quantify the costs associated with implementing additional safety precautions and a reduced service schedule in response to the COVID-19 pandemic. From March 2020 through June 13, 2020, the estimated financial impact to FT is \$1,750,555. Staff proposes to amend the agreement with FT to allow actual costs to be reimbursed for this period of time on a pass-through basis from OCTA. FT is responsible to provide detailed back-up documentation to justify the expenses related to COVID-19. Staff will continue discussions with FT related to COVID-19 impacts as service levels are adjusted to meet increasing demand.



***Procurement Approach***

This procurement was handled in accordance with OCTA Board of Directors (Board)-approved policies and procedures for professional and technical services.

On March 23, 2015, the Board approved a contract with FT for a four-year initial term with two, two-year option terms in the amount of \$143,487,171, from June 1, 2015 through May 31, 2019. The original agreement was awarded on a competitive basis and was previously amended as described in Attachment A.

The proposed Amendment No. 10 will be issued to include specific language in the agreement to allow reimbursement of certain expenses related to the current COVID-19 pandemic on a pass-through basis with a not-to-exceed amount as agreed upon through negotiations for the months starting from March 23, 2020 through June 13, 2020.

OCTA staff from the Contracts Administration and Materials Management, Financial Planning and Analysis, as well as Bus Operations departments have reviewed all the itemized costs of eligible expenses including salaries and benefits for contract employees on leave due to reduced service, bus maintenance costs, and PPE and cleaning supplies provided by FT. Based on the reduced service level, the total cost of PPE and cleaning supplies to meet the safety requirements, and the level of efforts associated with maintaining the buses, staff found the estimated pass-through total amount to be fair and reasonable.

Amending this agreement will increase the maximum cumulative obligation by \$1,750,555, bringing the total contract value to \$244,322,343.

**Fiscal Impact**

The cost associated with this amendment is fully reimbursable via the CARES Act.

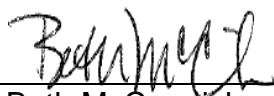
***Summary***

Based on the information provided, staff recommends award of Amendment No. 10 to Agreement No. C-4-1737 between OCTA and FT, in the amount of \$1,750,555, to allow reimbursement of specific expenses related to the current COVID-19 pandemic on a pass-through basis, for the period March 23 through June 13, 2020.

***Attachment***

A. First Transit, Inc., Agreement No. C-4-1737 Fact Sheet

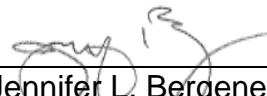
**Prepared by:**



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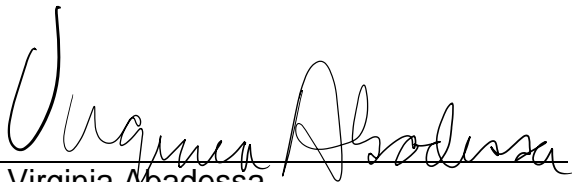
Beth McCormick  
Executive Director, Operations  
714-560-5964

**Approved by:**



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Jennifer L. Bergener  
Chief Operating Officer, Operations/  
Deputy Chief Executive Officer  
714-560-5462



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Virginia Abadessa  
Director, Contracts Administration and  
Materials Management  
714-560-5623

**First Transit, Inc.  
Agreement No. C-4-1737 Fact Sheet**

1. March 23, 2015, Agreement No. C-4-1737, \$143,487,171, approved by the Board of Directors (Board).
  - Agreement to provide all management and operation of contracted fixed-route, StationLink, and express bus service.
  - Initial term effective June 1, 2015 through May 31, 2019, with two, two-year option terms.
2. October 26, 2015, Amendment No. 1 to Agreement No. C-4-1737, \$0, approved by Contracts Administration and Materials Management (CAMM) Department.
  - Amendment to reimburse for costs associated with start-up of the operation.
  - Reimbursement costs for the start-up of the operation were included as part of the original agreement.
3. May 23, 2016, Amendment No. 2 to Agreement No. C-4-1737, \$3,476,956, approved by the Board.
  - Amendment to transfer the management and operation of the iShuttle service to First Transit, Inc., on June 13, 2016.
4. November 14, 2016, Amendment No. 3 to Agreement No. C-4-1737, \$1,838,402, approved by the Board.
  - Amendment to accommodate the operation of additional community circulator services through the Measure M2, Project V program.
5. April 10, 2018, Amendment No. 4 to Agreement No. C-4-1737, -(\$286,021), approved by CAMM.
  - Amendment to update the price summary to capture the original contract amount and subsequent addenda.
6. April 26, 2018, Amendment No. 5 to Agreement No. C-4-1737, \$0, approved by CAMM.
  - Amendment to revise exhibit A, scope of work, related to assessment of penalties, performance of repair, and/or replacement of major mechanical components.

7. June 25, 2018, Amendment No. 6 to Agreement No. C-4-1737, \$383,744, approved by the Board.
  - Amendment to increase service to accommodate the expansion of the iShuttle service.
8. November 2, 2018, Amendment No. 7 to Agreement No. C-4-1737, \$0, approved by CAMM.
  - Amendment to update First Transit key personnel assigned to the local management team.
9. November 12, 2018, Amendment No. 8 to Agreement No. C-4-1737, \$87,126,726, approved by the Board.
  - Amendment to exercise the first two-year option term to extend the current agreement through May 31, 2021.
10. June 24, 2019, Amendment No. 9 to Agreement No. C-4-1737, \$6,544,810, approved by the Board.
  - Amendment to increase the contract value to accommodate a wage increase for coach operators, dispatchers, road supervisors, and trainers.
11. June 22, 2020, Amendment No. 10 to Agreement No. C-4-1737, \$1,750,555, pending approval by the Board.

Total committed to First Transit, Inc., Agreement No. C-4-1737: \$ 244,322,343.



**June 11, 2020**

**To:** Transit Committee

**From:** Darrell E. Johnson, Chief Executive Officer

**Subject:** Amendment to Agreement with MV Transportation, Inc., for the OC ACCESS Service

### **Overview**

On July 1, 2013, the Orange County Transportation Authority Board of Directors approved an agreement with MV Transportation, Inc., for the management and operation of OC ACCESS service, which was subsequently extended through June 30, 2021. On March 19, 2020, the Governor issued a stay-at-home order in response to the novel coronavirus, which resulted in a significant decrease in OC ACCESS ridership. Staff requests an extension of the existing agreement through December 31, 2021, to allow time for the Orange County Transportation Authority to evaluate the novel coronavirus impact on the OC ACCESS service and to provide prospective proposers sufficient time to review and respond to a request for proposals.

### **Recommendation**

Authorize the Chief Executive Officer to execute Amendment No. 9 to Agreement No. C-2-1865 between the Orange County Transportation Authority and MV Transportation, Inc., in the amount of \$24,377,535, to extend the term of the agreement for an additional six months to operate the OC ACCESS service through December 31, 2021. This will increase the maximum obligation amount of the agreement to \$375,620,065.

### **Discussion**

The Americans with Disabilities Act (ADA) requires agencies that operate fixed-route bus service to provide complementary paratransit service for individuals with disabilities who are unable to use the fixed-route system. To comply with ADA, the Orange County Transportation Authority (OCTA) implemented the OC ACCESS service in 1993. The OC ACCESS service is different from traditional fixed-route service, requiring passengers to complete an

in-person assessment to become eligible, advance reservations, and subscription service is available.

MV Transportation, Inc. (MV), has managed, operated, and maintained the vehicles for the OC ACCESS service since 2013. The original agreement included an initial term of four years, with two, two-year option terms. Under this agreement, MV provides the primary OC ACCESS service using OCTA-owned vehicles. In order to enhance service efficiency and cost effectiveness, MV has a subcontract with Yellow Cab of Greater Orange County, Inc., to provide supplemental OC ACCESS service using smaller vehicles that are only deployed when needed. This arrangement has resulted in the OCTA-provided OC ACCESS fleet remaining consistent at 248 vehicles throughout the initial term and first, two-year option term.

Staff had planned to seek Board of Directors (Board) approval to release a request for proposals (RFP) to procure a new agreement for the provision of OC ACCESS services in April 2020. However, as a result of the novel coronavirus (COVID-19) pandemic priorities shifted and staff resources were diverted to address operational responses and challenges. A six-month extension will allow staff to consider the long-term implications of the pandemic and incorporate any necessary health and safety adjustments that are now recommended into the scope of work to provide future OC ACCESS service in. Staff plans to bring an RFP for the provision of OC ACCESS services to the Board for consideration before the end of the year.

To continue beyond the second, two-year option term, OCTA staff estimated the cost of the OC ACCESS service for the first six months of the proposed fiscal year 2020-21 budget.

### ***Procurement Approach***

On March 25, 2013, the Board approved a contract for a four-year initial term with two, two-year option terms with MV to provide turnkey management and operation of the OC ACCESS service from July 1, 2013 through June 30, 2017. The first two-year option term was executed in June 2017 and the second two-year option term was executed in July 2019, with Board approval. The procurement was handled in accordance with OCTA Board-approved policies and procedures for professional and technical services. The original agreement was awarded on a competitive basis and was previously amended, as described in Attachment A.

The proposed Amendment No. 9 is to extend the term of the agreement for six months to provide OC ACCESS service through December 31, 2021. During

the proposed six-month extension to the agreement, OCTA will continue to reimburse MV based on the same fixed and variable vehicle hour rates as those in the second option term. Amending the agreement will increase the maximum cumulative obligation by \$24,377,535, bringing the total contract value to \$375,620,065 for continued management, operation, and vehicle maintenance of the OC ACCESS service.

Staff will issue a solicitation within the next six months for a new procurement for the OC ACCESS service beginning on January 1, 2022.

#### **Fiscal Impact**

Funding for Amendment No. 9 to Agreement No. C-2-1865 is included in the OCTA Proposed Fiscal Year 2021-22 Budget, Operations Division.

#### ***Summary***

Authorize the Chief Executive Officer to execute Amendment No. 9 to Agreement No. C-2-1865 between OCTA and MV, in the amount of \$24,377,535, to extend the term of the agreement for an additional six months to operate the OC ACCESS service through December 31, 2021. The total contract value will be \$375,620,065.

***Attachment***

- A. MV Transportation, Inc., Agreement No. C-2-1865 Fact Sheet

**Prepared by:**



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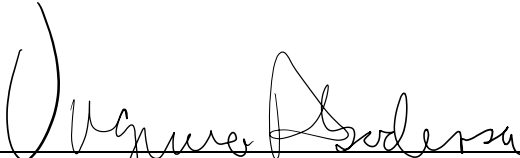
Jack Garate  
Department Manager, Paratransit  
Services  
714-560-5387

**Approved by:**



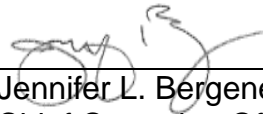
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Beth McCormick  
Executive Director, Operations  
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Virginia Abadessa  
Director, Contracts Administration and  
Materials Management  
714-560-5623



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Jennifer L. Bergener  
Chief Operating Officer, Operations/  
Deputy Chief Executive Officer  
714-560-5462



**MV Transportation, Inc.  
Agreement No. C-2-1865 Fact Sheet**

1. March 25, 2013, Agreement No. C-2-1865, \$156,690,376, approved by the Board of Directors (Board).
  - Agreement to provide all management and operation of ACCESS service.
  - Initial term effective July 1, 2013 through June 30, 2017, with two, two-year option terms.
2. February 27, 2014, Amendment No. 1 to Agreement No. C-2-1865, \$0, approved by Contracts Administration and Materials Management (CAMM) Department.
  - Amendment to revise key personnel.
3. June 20, 2014, Amendment No. 2 to Agreement No. C-2-1865, \$37,853, approved by CAMM.
  - Amendment to add decommissioning of vehicles to be utilized in the Senior Mobility Program (SMP).
4. December 28, 2015, Amendment No. 3 to Agreement No. C-2-1865, \$60,000, approved by CAMM.
  - Amendment to continue providing inspections, general maintenance and painting service of vehicles utilized in the SMP.
5. June 13, 2016, Amendment No. 4 to Agreement No. C-2-1865, \$7,841,232, approved by the Board.
  - Amendment to accommodate the costs associated with increased demand for service.
6. June 12, 2017, Amendment No. 5 to Agreement No. C-2-1865, \$90,982,108, approved by the Board.
  - Amendment to exercise the first two-year option term and extend the agreement term to June 30, 2019.
7. April 26, 2018, Amendment No. 6 to Agreement No. C-2-1865, \$0, approved by CAMM.
  - Amendment to revise Exhibit A, Scope of Work related to assessment of penalties, performance of repair, and/or replacement of major components, as well as increase service at the call center for Same-Day Taxi.

8. September 10, 2018, Amendment No. 7 to Agreement No. C-2-1865, \$0, approval by CAMM.
  - Amendment to update insurance requirements.
9. November 12, 2018, Amendment No. 8 to Agreement No. C-2-1865, \$95,630,961, approved by the Board.
  - Amendment to exercise the second two-year option term and extend the agreement term to June 30, 2021.
10. June 22, 2020, Amendment No. 9 to Agreement No. C-2-1865, \$24,377,535, pending approval by the Board.
  - Amendment to extend the agreement term to December 31, 2021.

Total committed to MV Transportation, Inc., Agreement No. C-2-1865: \$375,620,065.



**June 11, 2020**

**To:** Transit Committee  
**From:** Darrell E. Johnson, Chief Executive Officer  
**Subject:** OC Streetcar Project Quarterly Update

### **Overview**

The Orange County Transportation Authority is currently implementing the OC Streetcar project. Updates are provided to the Board of Directors on a quarterly basis. This report provides an update on OC Streetcar project activities from March 2020 through May 2020.

### **Recommendation**

Receive and file as an information item.

### **Background**

The Orange County Transportation Authority (OCTA), in cooperation with the cities of Santa Ana and Garden Grove, is implementing a modern streetcar running between the Santa Ana Regional Transportation Center (SARTIC) in the City of Santa Ana (City) and the intersection of Harbor Boulevard and Westminster Avenue in the City of Garden Grove. The OC Streetcar project (Project) will improve transit connectivity and accessibility, increase transit options, relieve congestion, and provide benefits to the community, and traveling public. The Project is being implemented as part of Measure M2 Project S – Transit Extensions to Metrolink, approved by Orange County voters in November 2006.

Construction of the 4.15-mile route OC Streetcar line involves complex and specialized work, including the installation of embedded track in streets, an overhead catenary system (OCS) to supply power to the vehicles, stops with canopies, bridges, and a maintenance and storage facility (MSF).

The Project includes ten streetcar stops in each direction (four shared center platforms and six side platforms in each direction, for a total of 16 platforms). Each stop includes a canopy, benches, leaning rails, trash cans, lighting, changeable

message signs, video cameras, a public address system, and ticket vending machines, which will be procured separately. Platforms will be 14 inches high to enable level boarding. Also included is the installation of new traffic signals and transit signal priority at intersections.

The MSF can accommodate up to 15 modern streetcar vehicles and accommodates all necessary administration, operations, vehicle maintenance, parts storage, and maintenance-of-way needs for the Project. Secured exterior vehicle storage, including a wye track for turning vehicles end-for-end, a free-standing vehicle wash, employee parking, and fire department/delivery access will also be included.

On March 26, 2018, the OCTA Board of Directors (Board) awarded a contract to Siemens Mobility, Inc., (Siemens) for the manufacture and delivery of eight modern streetcar vehicles, spare parts, and special tools. On September 24, 2018, the Board awarded the Project construction contract to Walsh Construction Company II, LLC (Walsh). On November 30, 2018, the Federal Transit Administration (FTA) executed the Full Funding Grant Agreement (FFGA), securing \$149 million in federal New Starts discretionary funding for the Project. In February 2019, the FFGA was awarded through the FTA Transit Award Management System, which was the final step necessary to begin the drawdown of federal funding. Through May 2020, \$31.5 million has been drawn down on the FFGA.

### ***Discussion***

The following is a status of ongoing Project activities. Also included is a brief summary of novel coronavirus (COVID-19) impacts for both the construction contractor and vehicle manufacturer.

#### **Construction Activities**

Construction activities continued throughout the Project, with the focus on construction of the Santa Ana River and Westminster Avenue bridges, the MSF, and relocation of storm drain, sewer, and water systems within the City's streets. Walsh has continued to follow state and local health care agency requirements regarding COVID-19 safety precautions, including appropriate social distancing and face coverings. While Walsh has submitted a force majeure letter and notified OCTA of potential supply chain disruptions, no COVID-19 cost or schedule impacts have been reported to date.

### Bridges and Pacific Electric Right-of-Way (PEROW)

The Santa Ana River Bridge foundations, columns, and abutments were installed during the 2019 dry season. Bridge beams were pre-cast offsite and installed in mid-May, and the bridge deck will be cast-in-place concrete on top of the pre-cast beams. Work on the retaining walls on both sides of the Santa Ana River Bridge is progressing, with the walls scheduled to be completed in July 2020.

Foundations, abutments, and the center pier for the bridge over Westminster Avenue were completed in December 2019. Falsework and reinforcing steel was installed for the soffit and stem and concrete placed in April 2020. The bridge deck concrete pour is scheduled for early June 2020.

Hauling of hazardous materials from the PEROW was delayed in March 2020 due to the contractor's non-compliance with federal and state contract requirements for hazardous waste handling and management. OCTA is coordinating closely with the contractor on preparation of a hazardous waste management work-plan that fulfills these requirements. Hauling and disposal of the hazardous materials will resume in June 2020.

Rail fabrication is in the final stages after challenges relating to quality verification requirements were addressed. Following completion of the PEROW grading, rail sticks will be delivered and then welded into several hundred-foot-long rail strings for installation in City streets and on the PEROW. Special track will be fabricated beginning in June 2020.

### Maintenance and Storage Facility

Construction of the MSF is critical to the Project schedule as it is needed to accept delivery and conduct final acceptance testing for the eight vehicles being manufactured by Siemens. Construction of the service and inspection pit has been delayed by contractor quality issues, primarily from not properly protecting the excavation site from the heavy rainfalls experienced in March 2020. This resulted in substandard structural backfill soil compaction results and rejection of the work. OCTA is coordinating closely with Walsh to resolve the issues and continue work. Structural steel members for the building frame have been fabricated and will be installed following completion of the building slab.

### City Streets

Wet utilities (sewer, water, and storm drains) are being relocated by Walsh as part of the construction contract. With the temporary closure of several businesses on Fourth Street and a significant reduction in traffic resulting from

stay at home orders, installation of the new water main on Fourth Street was expedited due to the City allowing a full street closure. However, relaxed closure requirements began diminishing the end of May 2020 as the City began allowing businesses to reopen. The City has also issued an executive order allowing restaurants to utilize on-street parking areas and side streets along Fourth Street for outdoor dining setup to mitigate COVID-19 social distancing business impacts. This may have short-term impacts on construction activities along Fourth Street. Most of the water mains are installed, with several cut-overs from the old mains to the new mains scheduled to be completed in June 2020. Sewer work is complete, with the exception of a line on French Street, which is scheduled to be completed this summer.

Storm drain relocations have been especially challenging to complete due to the extensive number of undocumented underground utilities that have been encountered. The approach of opening up a large section of the street to expose and survey all potential utility conflicts and adjusting the profile of the storm drain has been successful. The significant storm drains remaining are on Broadway and Main Street, which are expected to be completed this summer.

To accommodate the OCS, approximately 250 foundations are being installed in the sidewalk area, or planter strip between the curb and sidewalk, in the street running segment between Raitt Street and SARTC. In over half of the locations excavated to date, the contractor has encountered numerous additional undocumented underground utilities, including small conduits for irrigation, street lights, traffic signals, and residential service laterals. Hand digging up to the first five feet of each OCS foundation is the best approach to minimize the risk of damaging an undocumented utility. A similar approach is recommended for the installation of the traffic signal and street light pole foundations. A contract change order to accommodate this work is being prepared and will be presented to the Board in June 2020 for approval.

OCTA is coordinating closely with the City to enhance the quality of pavement affected by the significant amount of utility work. The contractor has complied with requests to temporarily restore pavement conditions, recognizing that the pavement conditions will again be disrupted with the start of the embedded track installation. OCTA is committed to continuing to coordinate with the City and the contractor to ensure pavement conditions meet contract requirements and City standards.

Dry utilities (electric, communications, and gas) are being relocated by the owners of these systems, with most of these third-party utility relocations complete. Remaining work includes Southern California Edison's removal of underground vaults on Santa Ana Boulevard after Verizon completes its

relocations. The relocations of dry utilities have stayed ahead of Walsh's activities.

#### Vehicle Manufacturing and Delivery

On March 19, 2020, OCTA was notified by Siemens that production had ceased on all vehicles due to a health order issued by Sacramento County. Once Siemens was determined to be an essential business, the production plant was subsequently reopened in a phased manner. In early April 2020, Siemens returned to a 100 percent production level of the OC Streetcar vehicle. In addition to the brief closing of the plant, Siemens reported some initial material shortages and delivery delays from suppliers. However, OCTA has not been notified by Siemens of any reported impacts to the overall delivery schedule.

During the reporting period, the first article inspection (FAI) was conducted for the truck assembly. The trucks contain the motor, gearbox, braking system, and the vehicle steel wheels. Outstanding FAIs that require out-of-state travel are on hold due to current travel restrictions.

The following is a summary of each of the eight vehicles' production status:

Vehicle No.	Status
01	<ul style="list-style-type: none"><li>• Girder and carshell complete.</li><li>• Doors and windows installed</li><li>• Floor painted</li><li>• Roof installed</li><li>• Water test conducted</li><li>• Trucks staged for installation</li></ul>
02	<ul style="list-style-type: none"><li>• Girder and carshell complete.</li><li>• Truck painted and staged for equipping</li></ul>
03-04	<ul style="list-style-type: none"><li>• Car shell fabrication in process</li></ul>
05-08	<ul style="list-style-type: none"><li>• Girder set complete</li></ul>

Parallel to production of the vehicle carshells, final design review continues for remaining vehicle components, including the crash energy management and energy absorbing bumper, emergency battery drive, and flange lube system. These items are anticipated to be closed out next quarter.

Staff continues to receive weekly reports from OCTA's on-site vehicle inspector with details of production progress, pictures of the work completed, and the upcoming production schedule and milestones. The on-site vehicle inspector also reviews the subcontractors' manufacturing processes and performs critical quality control checks.

Coordination is ongoing between Conduent Transportation, OCTA, and Siemens in the design of the computer-aided dispatch and automated vehicle location, as well as the communications equipment on the vehicles. Coordination also continued between OCTA, Siemens, and Walsh in the integration of the streetcar vehicle with the infrastructure, including the tracks, platforms, MSF, and wayside equipment and systems.

#### **Operations and Maintenance (O&M) Contract**

On May 22, 2020 the OCTA Board approved the award of the O&M contract to Herzog Transit Services (Herzog). In the next quarter, staff will finalize negotiations with Herzog, execute the contract, and prepare for issuance of the Notice to Proceed.

#### **Public Outreach**

Outreach activities in this quarter remained focused on keeping the community and stakeholders informed of construction activities along the corridor with increasing focus on digital communication tools. The biweekly construction news email alert was refreshed with simplified formatting for easier viewing on phones and other handheld devices.

In mid-March 2020, direct contact in the community was halted due to newly-established COVID-19 protocols. Community events were cancelled, and outreach staff suspended tabletop presentations. Outreach staff provided electronic and phone communications to inform residential and business owners of specific activities, such as interruptions to water service or connections to fire service lines. When electronic and phone communications were not available, door hangers were used to ensure notification.

The Project app remains a source of current information about Project activities. The photo library within the app continues to offer a variety of images for those interested in seeing the Project's progress, including the Westminster Bridge.

As businesses in downtown Santa Ana (downtown) shifted focus from in-person dining to delivery and pick-up services, outreach provided coordination for allowing access to businesses and deliveries when construction had closed streets. The City works closely with the downtown businesses through its economic liaison office, and a weekly call has been established with members of the Santa Ana Business Improvement District to discuss needs throughout the COVID-19 response. OCTA outreach staff also participates on the calls to provide construction updates and assist with resolving access issues and accommodations the City is making to expand outdoor dining opportunities.



Although in-person events are cancelled, some such as the Santa Ana Artwalk have gone virtual. OCTA supports these events through ads on the Project's social media platforms.

The Eat Shop Play (ESP) program has grown to 25 members and the program's website continues to be updated with new profiles. More than 29 social media ads have run in the past few months highlighting the ESP businesses offering take-out and delivery services.

On February 24, 2020, the Board approved entering into agreements with two business associations that directly support Santa Ana's Business Improvement District. The two business associations will provide quarterly updates to OCTA., with the first update expected in July 2020. OCTA staff and association representatives meet on a monthly basis to discuss the coordination between its business activities and OCTA outreach efforts.

#### **Cost and Schedule**

The Project cost, as included in the FFGA, remains at \$407.7 million, including \$37.96 million in contingency. As of May 2020, approximately \$22.8 million in contingency has been expended or committed. As reported to the Board in February 2020, the revenue service date is anticipated for mid-2022. Work is underway on an updated risk analysis to adjust the Project cost estimate and schedule. Staff will return to the Board to present the results of this analysis and any cost and schedule adjustments that are needed.

#### **Next Steps**

Construction activities in the next quarter are scheduled to include preparation of pits and slabs for the MSF building foundations, constructing retaining walls and approach fills for the Westminster Avenue and Santa Ana River bridges, the superstructure for the Westminster Avenue Bridge, preparation for ballasted track installation in the PEROW, and the start of in-street embedded track installation. Next steps for vehicles include finalizing design for remaining vehicle components, additional first article inspections, and continued production and assembly for the remaining vehicles. Upcoming outreach activities include coordination with the construction team and the City regarding traffic control measures that will be needed for the in-street embedded track installation.

#### **Summary**

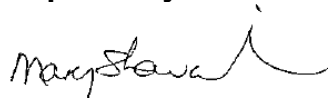
An OC Streetcar project update is provided for the Orange County Transportation Authority Board of Directors' review.

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***Attachment***

None.

**Prepared by:**

A handwritten signature in black ink, appearing to read "Mary Shavalier".

Mary Shavalier  
Program Manager  
(714) 560-5856

**Approved by:**

A handwritten signature in blue ink, appearing to read "James G. Beil".

James G. Beil, P.E.  
Executive Director, Capital Programs  
(714) 560-5646

# **OC Streetcar Project Quarterly Update**

# Construction—Segment 1



- Santa Ana River Bridge - Pre-cast bridge beams were installed mid-May; good progress being made on the retaining walls on both sides of the bridge
- Westminister Bridge - Concrete stem pour completed in April; concrete deck pour scheduled for early June
- Maintenance and Storage Facility (MSF) - Construction of the service and inspection pit was delayed by contractor quality issues

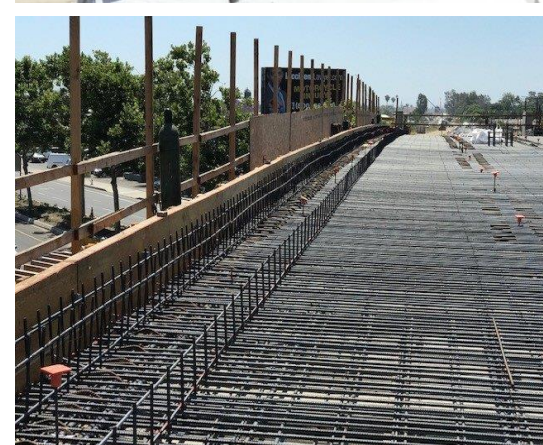


# Santa Ana River Bridge





# Westminster Avenue Bridge



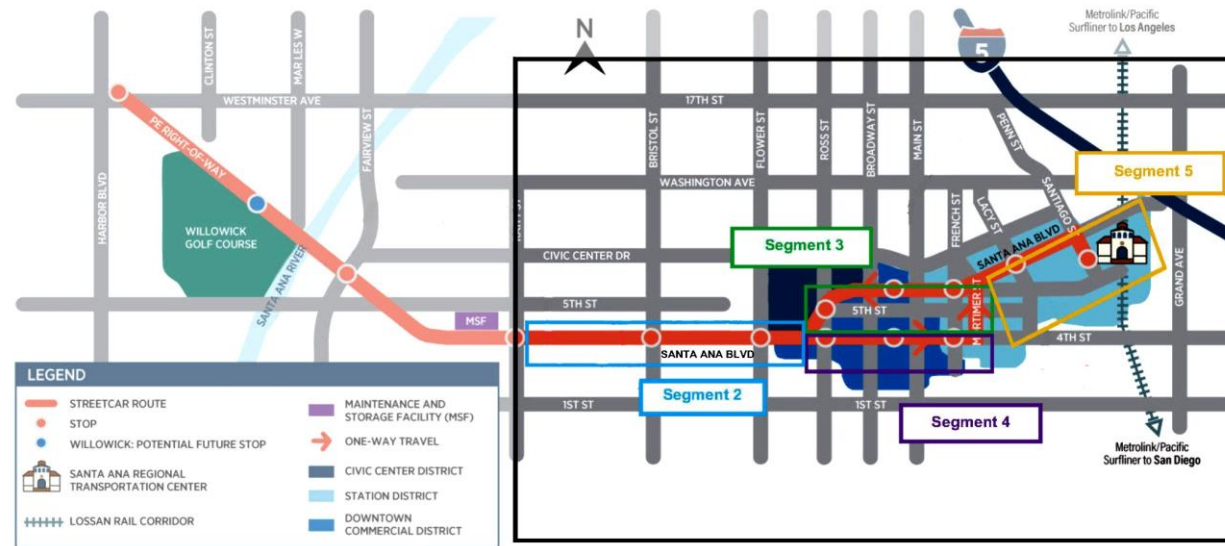


# Maintenance and Storage Facility (MSF)





# Construction—Segments 2 Through 5



- Wet utilities relocated by OCTA's contractor: water, sewer, and storm drain
  - Sewer work is complete except for a line on French Street which is scheduled to be completed this summer
  - Most of the water mains are installed; several cut-overs from the old mains to the new mains are scheduled to be completed in June
  - Storm drain relocations have been challenging to complete due to the extensive number of undocumented underground utilities; the significant storm drains remaining are on Broadway and Main Street which are expected to be completed this Summer
- Installation of pole foundations to support overhead catenary system, traffic signal and street lights underway; undocumented utilities are being encountered in many locations. Contract change order for hand excavation of pole foundations to minimize risk is scheduled for the June 22<sup>nd</sup> Board meeting



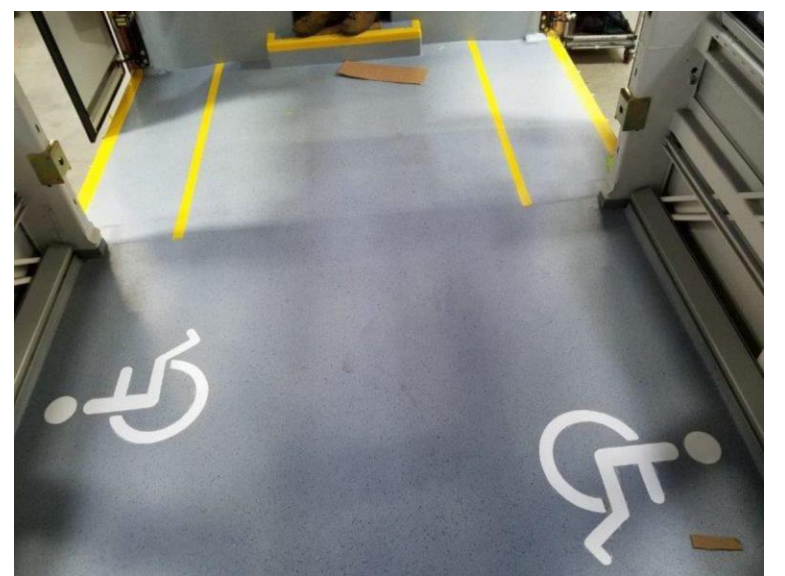
# Vehicles

- All eight vehicles in various stages of production
- First article inspection was conducted for the truck assembly
- Finalizing outstanding items from final design review
- Ongoing coordination with Conduent and Siemens on computer-aided dispatch and automated vehicle location design specifications
- Ongoing coordination between OCTA, Siemens, and Walsh Construction Company II, LLC, in the integration of the streetcar vehicle with the infrastructure, including the tracks, platforms, MSF, and wayside equipment and systems





# Vehicle Interior





# OC Streetcar Outreach – Support

## Eat, Shop, Play

- 23 business web profiles
- 29 social media ads
- Bi-weekly e-newsletter

### Eat Shop Play Deals

Present this coupon (on your phone or print) to the business at the time of purchase to redeem (all deals are subject to change).

Arts & Entertainment



6pm-10pm on the First Saturday of each month

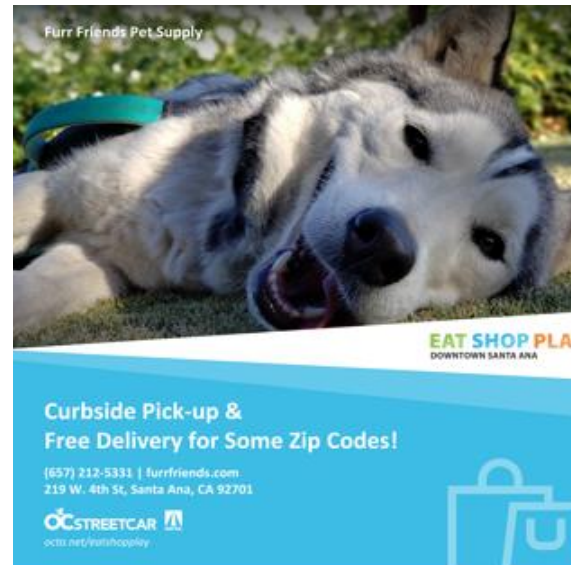
[VIEW DETAILS](#)



Sign up for GENE's Newsletter and receive 20% off of your first order

[VIEW DETAILS](#)

Eat & Drink

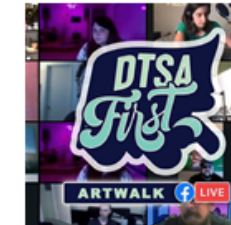


[Anuncio en Español](#)

Governor Newsom has issued a "stay at home" executive order to help reduce the spread of COVID-19. Construction of public transportation projects is considered an essential service and is exempt from this order. Work will continue on the OC Streetcar project as scheduled.

The Orange County Transportation Authority (OCTA) Eat Shop Play program supports businesses located along the future OC streetcar route. Benefits to customers include special deals and coupon promotions, invitations to community events and free parking for the first 2 hours in nearby structures. Learn more at [octa.net/eatshopplay](https://octa.net/eatshopplay).

Check out some of our featured businesses and events below!



Saturday, May 2

Digital Artwalk

4PM - 8 PM

[dtsaartwalk.org](https://dtsaartwalk.org)

This Saturday, on May 2nd, local artists will be sharing their work via live stream on the Downtown Santa Ana Facebook Page starting at 6 PM.

[Learn More](#)



Tuesday, May 5

The Frida Cinema 10-Hour Social Distancing Stream-a-Thon Fundraiser

12 PM - 10 PM

[thefridacinema.org](https://thefridacinema.org)

Join The Frida Cinema for their second fundraising live stream. Donations can be made by texting the word FILM to 714-276-6080 or at [thefridacinema.kindful.com](https://thefridacinema.kindful.com).

[Learn More](#)



Every Tuesday

DTSA Farmer's Market

253 E 3rd St.  
Santa Ana, CA 92701

10 AM - 2 PM  
[downtown-santaana.com](https://downtown-santaana.com)

Come support this local, essential small business. Serving the community every Tuesday starting at 10 AM.

[Learn More](#)

# OC Streetcar Outreach – Construction

- E-blasts
- Social media
- Mobile app
- Phone calls
- Doorhangers
- Business agreements



## Construction Alert Week of April 27, 2020

Governor Newsom has issued a "stay at home" executive order to help reduce the spread of COVID-19. Construction of public transportation projects is considered an essential service and is exempt from this order. Work will continue on the OC Streetcar Project as scheduled.

Si tiene alguna pregunta acerca del proyecto del OC Streetcar, llame a Robert Chevez al (909) 714-0172.

Foundation installation for the poles necessary to carry the overhead wiring of the OC Streetcar will continue in Segment 2

- Construction activities include excavation, trenching, concrete pours and road work and restoration
- Tree trimming and tree removals may be necessary along the streetcar route. Crews will follow all necessary guidelines for monitoring possible bird nesting's with an arborist
- Temporary parking and lane closures may be in place

Water pipeline and storm drain work will continue along the streetcar route

- Construction activities include excavation, trenching, installation of water pipelines and storm drains, and road work and restoration
- Temporary parking and lane restrictions may be in place

Access will be maintained for all residents and businesses. Construction activities are dependent on weather and resource availability.

For specific work activities in your area, see the segment overviews below. For daily updates, please download the OC Streetcar app available in the [Apple Store](#) and [Google Play](#).







***June 11, 2020***

**To:** Transit Committee

**From:** Darrell E. Johnson, Chief Executive Officer

**Subject:** Bus Operations Performance Measurements Report for the Third Quarter of Fiscal Year 2019-20

***Overview***

The Orange County Transportation Authority operates fixed-route bus and demand-response paratransit service throughout Orange County and into neighboring counties. The established measures of performance for these services assess the safety, courtesy, reliability, and overall quality of these services. This report summarizes the year-to-date performance of these services through the third quarter of fiscal year 2019-20.

***Recommendation***

Receive and file as an information item.

***Background***

The Orange County Transportation Authority (OCTA) operates a countywide network of 60 routes, including local, community, rail connector, and express bus routes serving over 5,000 bus stops. Fixed-route bus (OC Bus) service operates in a 798 square-mile area, serving more than three million residents in 34 cities and unincorporated areas, with connections to transit services in Orange, Los Angeles, and Riverside counties. OCTA provides these services through both directly-operated (DOFR) and contracted fixed-route service (CFR). OCTA also provides OC ACCESS, a federally-mandated paratransit service, which is a shared-ride program available for people unable to use the OC Bus service because of functional limitations. Performance measures for both, OC Bus and OC ACCESS services are summarized and reported quarterly (Attachment A).

### ***Discussion***

This report provides an update on the performance of the OC Bus and OC ACCESS services by presenting the current trends and comparisons with OCTA-established performance standards for transit system safety, courtesy, and reliability. OCTA counts preventable vehicle accidents to evaluate system safety, customer complaints to assess courtesy, and uses both on-time performance and miles between road calls (MBRC) to measure service reliability. This report includes year-to-date performance through the third quarter, including the months of January, February, and March of fiscal year (FY) 2019-20.

It is important to note that OCTA implemented a reduced service schedule for OC Bus on March 23, 2020 in response to the novel coronavirus (COVID-19) pandemic. The impact that COVID-19 has had on both OC Bus and OC ACCESS has been significant, but because the impacts did not begin to manifest themselves until mid-March, the impact on the performance metrics for the entire three-month period is not significant. Impacts as a result of COVID-19 will be much more evident and discussed in the performance measures report for the following quarter.

- Safety – DOFR OC Bus and OC ACCESS services both remain below the accident frequency standard as the number of preventable accidents recorded for each mode exceeded one preventable accident per 100,000 service miles for the year-to-date numbers. OCTA Operations staff have continued to focus on and stress the importance of safety, conduct safety-related campaigns, and promote the safe driving award program. Improvements were realized between January and March, moving the trend line towards meeting the standard. Improvements were realized between January and March, moving the trend line towards meeting the standard. Improvements were realized between January and March, moving the trend line towards meeting the standard. For OC ACCESS service, fixed object and curb strikes continued to pull overall performance below standard. However, the contractor did take steps to address performance in this area with the Regional Director of Safety for Southern onsite during February 2020. OCTA Operations staff will continue to focus on and stress the importance of safety, conduct safety-related campaigns, and promote the safe driving award program. CFR OC Bus service continued to improve compared to the previous quarter, resulting in year-to-date performance that exceeds the standard.

- Customer Service – Customer service is measured by evaluating the number of valid customer complaints received compared to boardings. During the first quarter, all modes of service performed above the respective standards.
- Reliability – On-time performance (OTP) for OC Bus and OC ACCESS remain below target but showed improvement between January and March. The improvement in fixed-route OTP is likely a result of the OTP for March. In March, OTP for fixed-route services was 87.4 percent, an increase of 6.6 percent. OTP for OC ACCESS improved slightly by 0.2 percent.

The MBRC for all modes of service exceeded the standard through the reporting period. OCTA staff will continue to monitor performance in this area and work with the contractor to sustain or improve overall performance.

The report also includes:

- An assessment of the efficiency of OCTA transit operations based on industry standards for ridership, productivity, farebox recovery, and cost per revenue vehicle hour;
- A review of contractor performance for CFR and OC ACCESS services;
- A route-level performance evaluation that includes subsidy per boarding, revenue per boarding, and resource allocation (buses); and
- A status report on the service adjustments and strategies implemented under the OC Bus 360° Program, including OC Flex and the College Pass Program.

### ***Summary***

Through the third quarter of FY 2019-20, the performance of OC Bus service and OC ACCESS exceeded the performance in the areas of courtesy and reliability (MBRC). While the safety and reliability standards continue to improve, year-to-date performance has not met the standard; staff will continue to focus efforts in both safety and reliability. The performance of OC ACCESS exceeded the standard for courtesy but fell below the performance standard for safety and reliability. OCTA staff continue to focus on continuous quality improvement in safety and reliability as detailed in the report. In addition to tracking the established key performance indicators, staff will continue to manage the service contracts pursuant to contract requirements and work to identify other strategies to improve overall system performance.

***Attachment***

- A. Bus Operations Performance Measurements Report, Third Quarter,  
Fiscal Year 2019-20

**Prepared by:**



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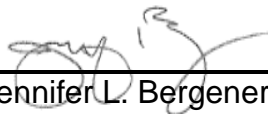
Johnny Dunning, Jr.  
Manager, Scheduling and Bus  
Operations Support  
(714) 560-5710

**Approved by:**



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Beth McCormick  
General Manager, Operations  
(714) 560-5964



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Jennifer L. Bergener  
Chief Operating Officer, Operations/  
Deputy Chief Executive Officer  
714-560-5462



# Bus Operations Performance Measurements Report



Third Quarter  
Fiscal Year 2019-20

# About This Report

The Orange County Transportation Authority (OCTA) operates a countywide network of 61 routes including local, community, rail connector, and express bus routes serving over 5,000 bus stops known as OC Bus. OCTA also operates paratransit service (OC ACCESS), a shared-ride program available for people unable to use the standard OC Bus service because of functional limitations. OC Bus service is provided through both direct operations by OCTA referred to as directly operated fixed-route (DOFR) and contracted operations referred to as contracted fixed-route (CFR). The OC ACCESS service is a contract-operated demand-response service required by the Americans with Disabilities Act that is complementary to the fixed-route service and predominately accounts for the overall paratransit services operated by OCTA. These services make up the bus transit system and are evaluated by the performance measurements summarized in this report.

This report tracks bus system safety, as measured by vehicle accidents; courtesy, as measured by customer complaints; and reliability, as measured by on-time performance (OTP) and miles between road calls (MBRC). Along with these metrics, industry-standard measurements are tracked to assess OCTA bus operations; these measurements include ridership, productivity, farebox recovery ratio (FRR), and cost per revenue vehicle hour (RVH). Graphs accompany the details of each indicator showing the standards or goals and the values for the current reporting period. The following sections provide performance information for OC Bus service, DOFR and CFR, and OC ACCESS service.

It is important to note that OCTA implemented a reduced service schedule for OC Bus on March 23, 2020 in response to the novel coronavirus (COVID-19) pandemic. The impact that the COVID-19 pandemic has had on both OC Bus and OC ACCESS has been significant, but because the impacts did not begin to manifest themselves until mid-March, the impact on the performance metrics for the entire three-month period, is not significant. Impacts as a result of the COVID-19 pandemic will be much more evident and discussed in the performance measures report for the following quarter.

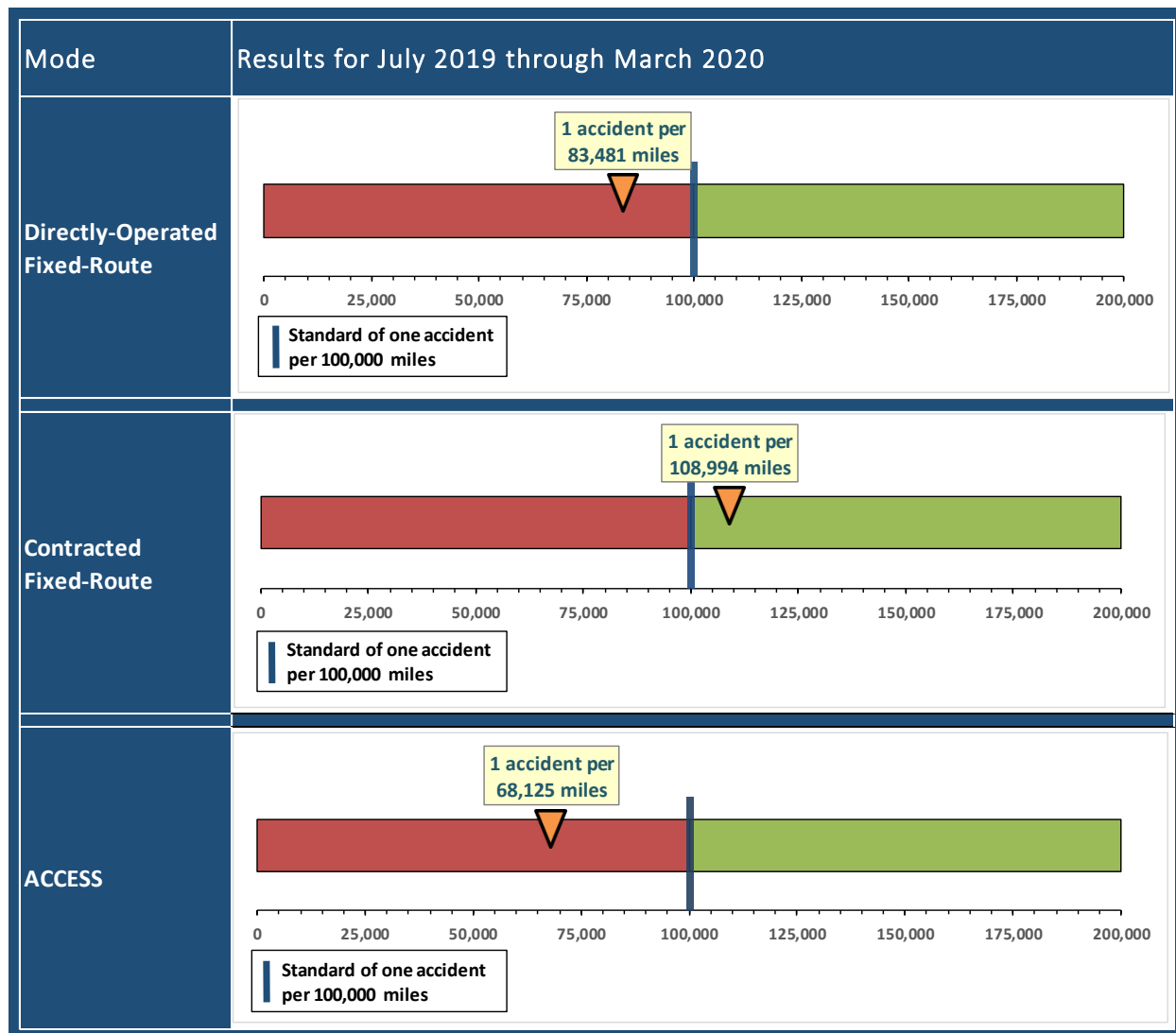
## **FY2019-20 Q3 SUMMARY**

- **Safety:**
  - DOFR - ▼
  - CFR - ▲
  - OC ACCESS - ▼
- **Courtesy:**
  - DOFR - ▲
  - CFR - ▲
  - OC ACCESS - ▲
- **On-Time Performance:**
  - DOFR - ▼
  - CFR - ▼
  - OC ACCESS - ▼
- **Miles Between Road Calls:**
  - DOFR - ▲
  - CFR - ▲
  - OC ACCESS - ▲

## Safety: Preventable Vehicle Accidents

OCTA is committed to the safe delivery of the OC Bus service. The safety standard for DOFR, CFR, and OC ACCESS services is no more than one vehicle accident per 100,000 miles. Preventable vehicle accidents are defined as incidents when physical contact occurs between vehicles used for public transit and other vehicles, objects, or pedestrians, and where a coach operator failed to do everything reasonable to prevent the accident.

Through the third quarter of fiscal year (FY) 2019-20, all modes of service, except CFR, performed below the safety standard, operating less than 100,000 miles between preventable accidents.

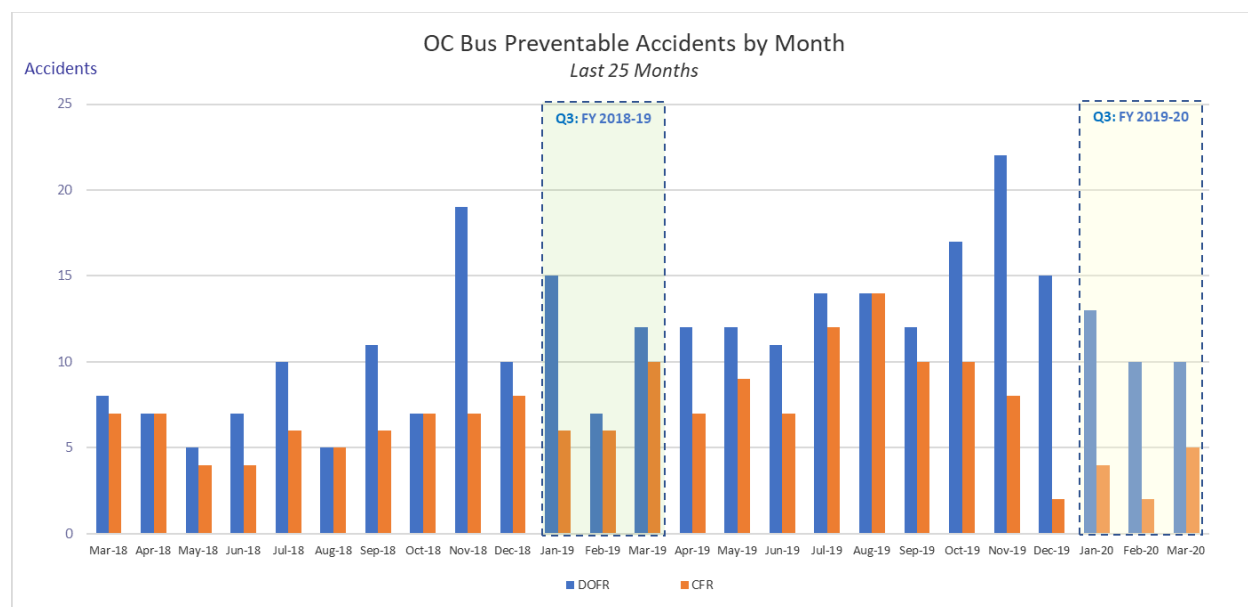


DOFR OC Bus and OC ACCESS services both remain below the accident frequency standard as the number of preventable accidents recorded for each mode exceeded one preventable accident per 100,000 service miles for the year-to-date numbers. Improvements were realized between January and March. During this time, there was a 39 percent decrease in the number of preventable accidents compared to last quarter resulting in an accident rate of less than one accident per 100,000 miles. To sustain this trend,

OCTA Operations staff will continue to focus on and stress the importance of safety, conduct safety-related campaigns, and promote the safe driving award program.

CFR OC Bus service performance also continued to improve during the third quarter, exceeding the standard. Between the months of January and March, the number of preventable accidents reported by the contractor decreased by 45 percent. Monthly comprehensive safety campaigns continue that focus on different topics using a variety of communication methods including posters, safety messages, hands-on training, and discussions at monthly safety meetings by the CFR management.

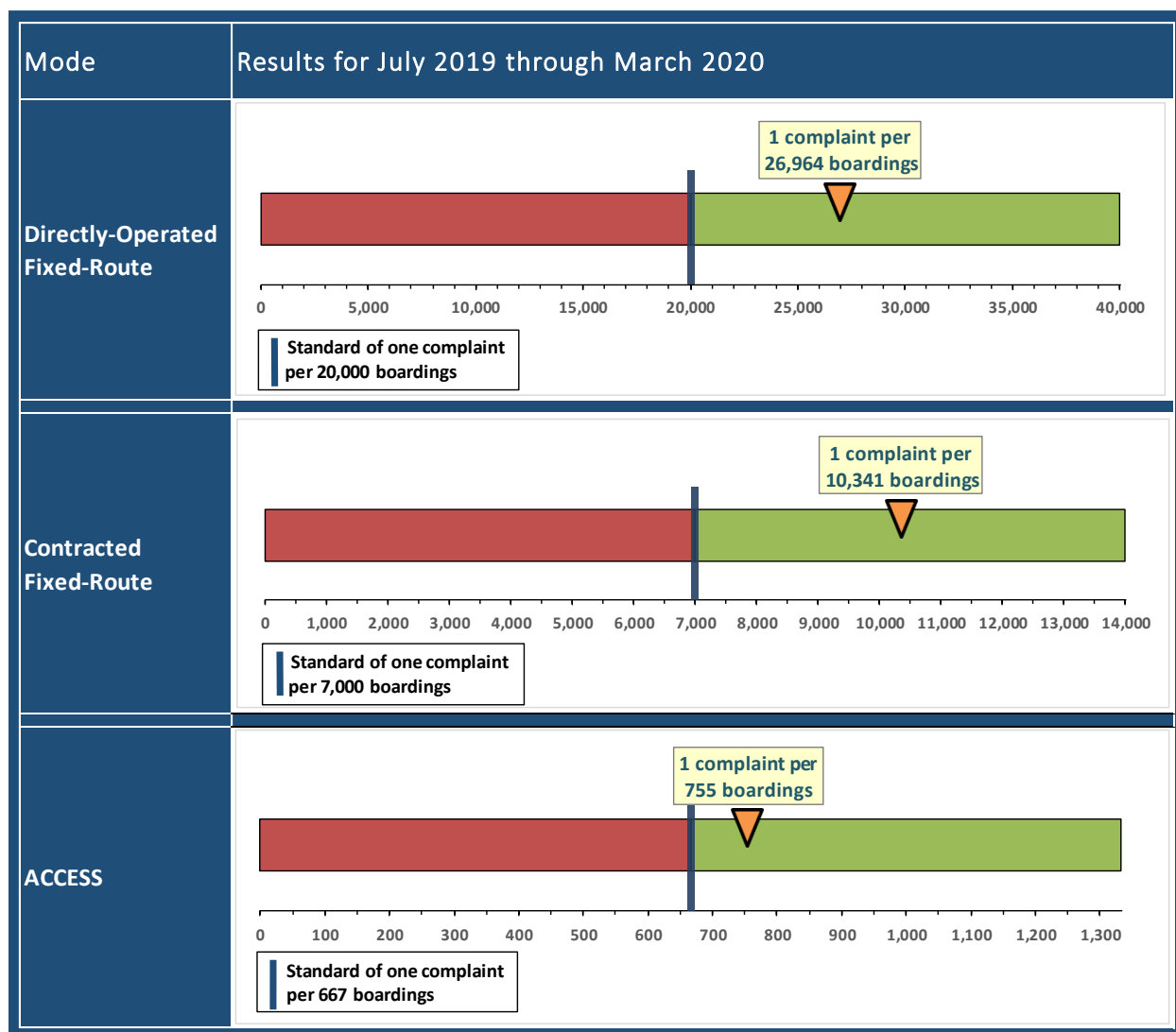
For OC ACCESS, though there was a decrease in the number of preventable accidents compared to the second quarter, fixed object and curb strikes continue to drive overall performance below standard. However, the contractor did take steps to address the increase which included having the Regional Director of Safety for Southern California onsite during February 2020 to review the safety program and to ensure that the safety initiatives were being implemented properly. The efforts taken by the contractor resulted in a significant decrease in preventable accidents for February (eight) and March (five) from after a subpar performance in January (20). The following chart shows the trend of preventable accidents for fixed-route service over the last two years.



## Courtesy: Customer Complaints

OCTA strives to achieve a high level of customer satisfaction in the delivery of OC Bus services. The performance standard for customer satisfaction is courtesy as measured by the number of valid complaints received. Customer complaints are the count of incidents when a rider reports dissatisfaction with the service. The standard adopted by OCTA for DOFR OC Bus is no more than one customer complaint per 20,000 boardings; the standard for CFR OC Bus service is no more than one complaint per 7,000 boardings; and the contractual standard for OC ACCESS is no more than one complaint per 667 boardings.

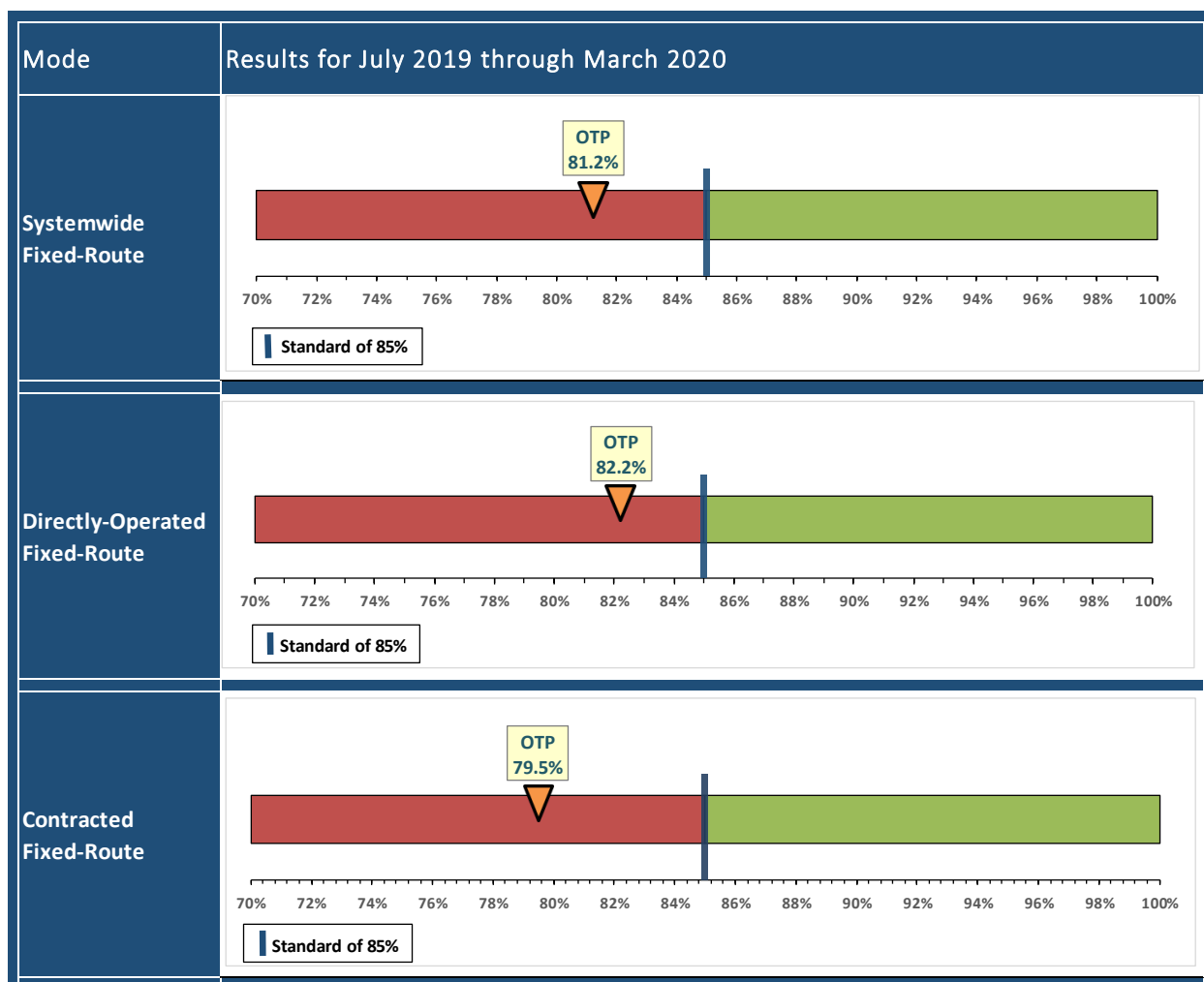
Through the third quarter of FY 2019-20, all modes of service continue to perform well, exceeding the courtesy standard with less than one valid complaint per 20,000, 7,000, and 667 boardings, respectively.



## Reliability: On-Time Performance

Reliability is vital to a successful transportation network. Reliability for OCTA is measured in part by OTP. OTP is a measure of performance which evaluates the schedule adherence of a bus operating in revenue service according to a published schedule. Schedule adherence is tracked by monitoring the departure of vehicles from time points, which are designated locations on a route used to control vehicle spacing as shown in the published schedule. For OC Bus service, a trip is considered on-time if it departs the time point no more than five minutes late. OCTA's fixed-route system standard for OTP is 85 percent. For OC ACCESS service, OTP is a measure of performance evaluating a revenue vehicle's adherence to a scheduled pick-up time for transportation on a demand response trip. A trip is considered on-time if the vehicle arrives within a 30-minute window. The OC ACCESS OTP standard is 94 percent.

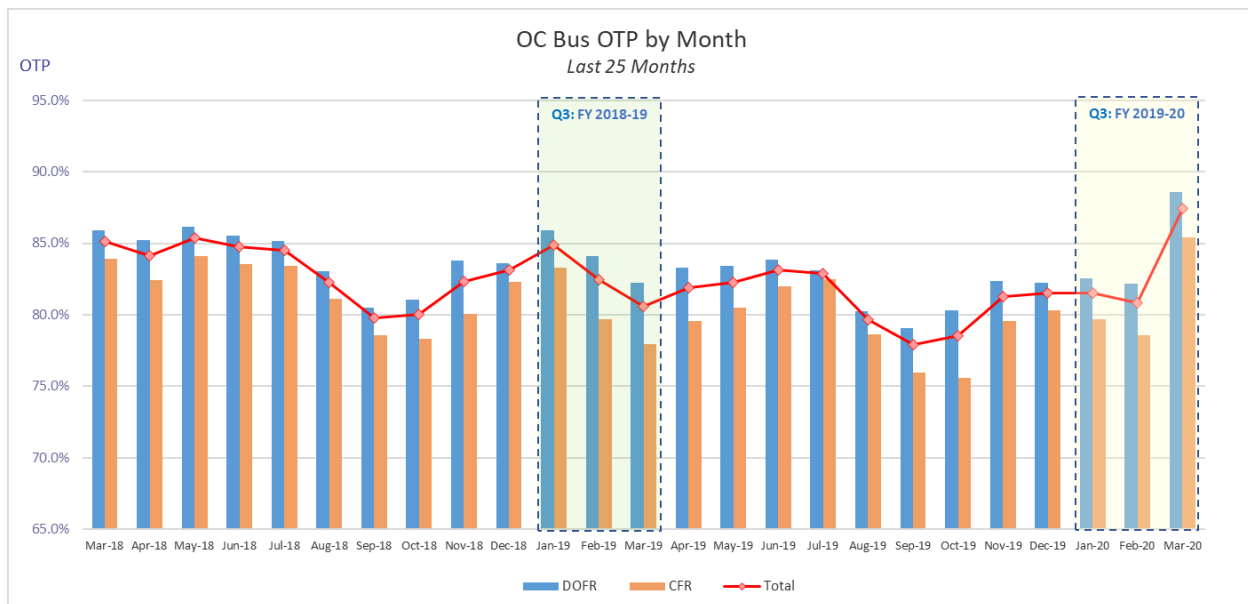
On-time performance (OTP) for OC Bus and OC ACCESS remain below target but showed improvement between January and March with OTP rates of 81.2 percent and 92.4 percent, respectively.



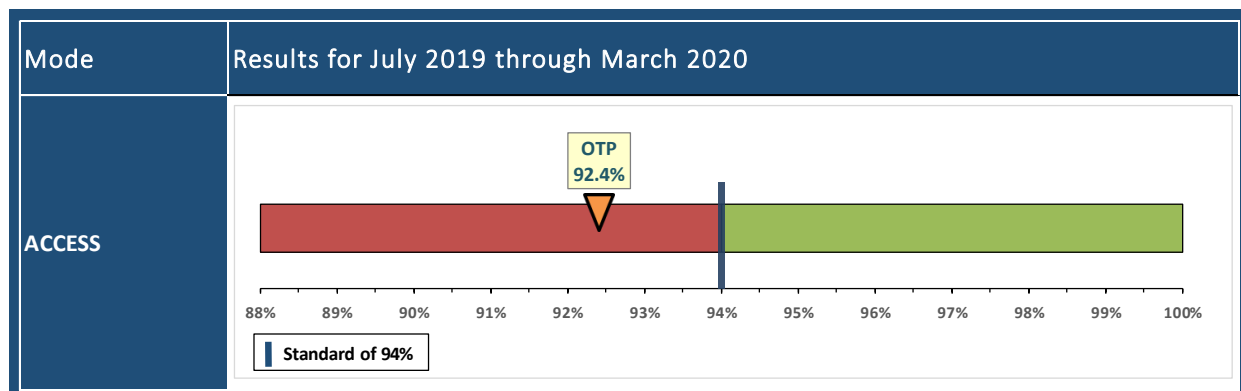
OTP for the DOFR OC Bus service through the third quarter was at 82.2 percent, a 1.0 percent increase from last quarter but 1.0 percent lower than the same time last year. The OTP for the CFR OC Bus service through

the third quarter showed improvement, reaching 79.5 percent, a 0.7 percent increase from last quarter and 1.1 percent lower than the same time last year.

The improvement in OTP is likely a result of the OTP for March. In March, OTP for fixed-route services was 87.4 percent, an increase of 6.6 percent. For the first time in over two years, OTP for both directly operated fixed-route (DOFR) and contract fixed-route (CFR) services exceeded the performance standard of 85 percent in a month, at 88.6 percent and 85.4 percent, respectively. The OTP for March is largely attributed to changes in travel patterns due to the state and national orders associated with the COVID-19 pandemic. This led to reduced traffic on the roads, reduced ridership, and shorter dwell times at bus stops. The following chart shows the OTP trend for fixed-route service over the last two years.



OCTA Operations staff will continue to monitor the dynamic traffic conditions as travel restrictions are lifted to ensure the current overall OTP is maintained and monitor the need for bus running time adjustments needed to reflect traffic associated with on-going construction projects. The contractor management team will continue to focus on coach operator behavior, performing route level checks and coaching and counseling as appropriate.



OTP for OC ACCESS service (Primary Service and Supplemental Taxi) for the third quarter was 92.4 percent, 1.6 percent below the standard, 0.2 percent higher than last quarter, and 0.7 percent lower than the 93.1 percent reported during the same period last year.

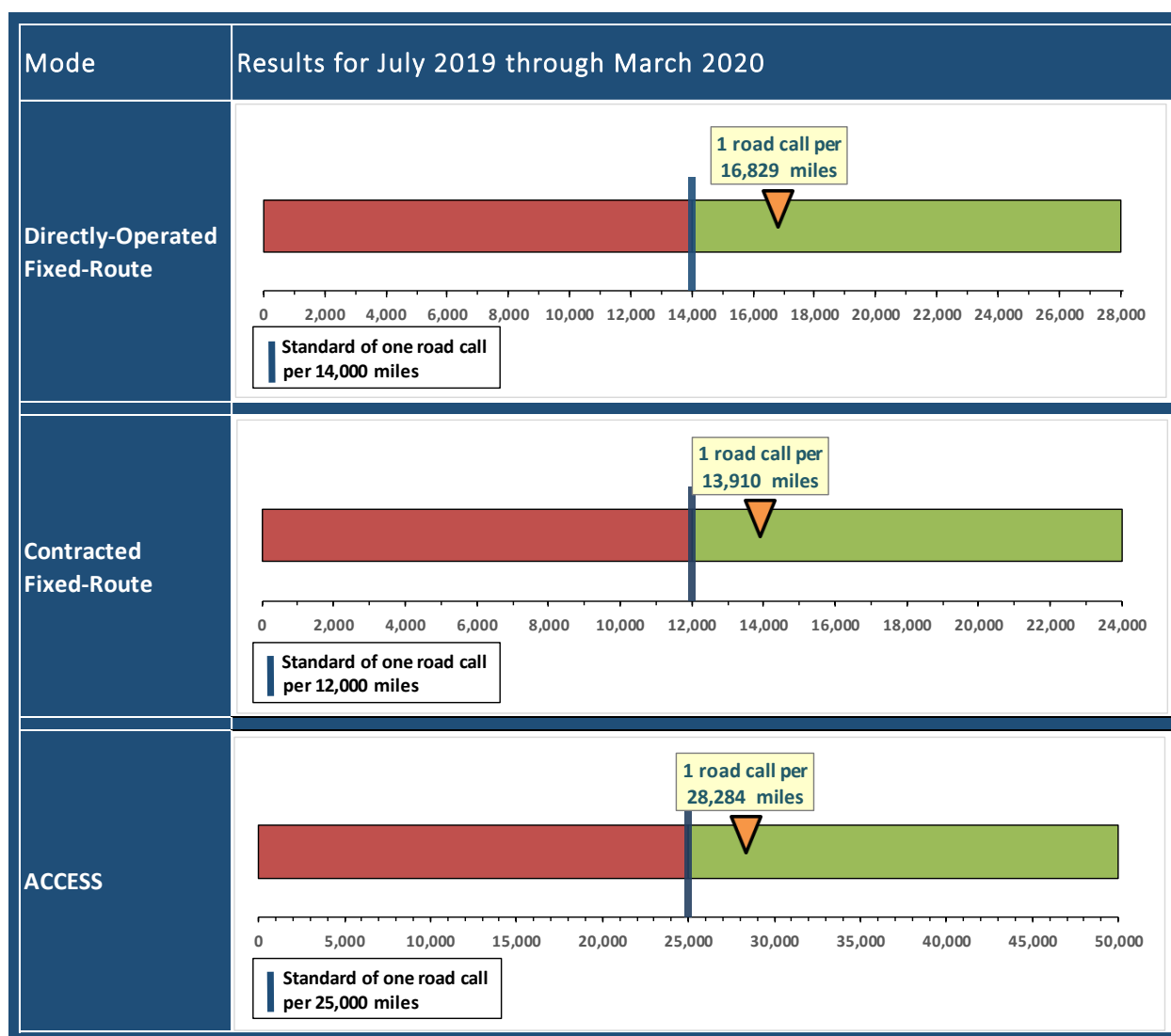
The contractor continued their work, making modifications to subscription trip routing/scheduling for individuals traveling to adult day programs. These changes were implemented in early-March 2020 but did not have the level of impact that was expected as a result of the COVID-19 pandemic.

OCTA staff will be working closely with the contractor to ensure plans are in place to meet performance standards during and after stay-at-home orders are lifted.



## Reliability: Miles Between Road Calls

MBRC is a vehicle reliability performance indicator that measures the average distance in miles that a transit vehicle travels before failure of a vital component forces removal of the vehicle from service. OCTA has adopted standards for the MBRC for DOFR, CFR, and OC ACCESS services. These standards vary to align with the specific type of service being provided and account for the variability inherent to each of these services including the vehicles assigned. The specific standards as adopted by OCTA are 14,000 MBRC for DOFR OC Bus service; 12,000 MBRC for CFR OC Bus service; and 25,000 MBRC for OC ACCESS.



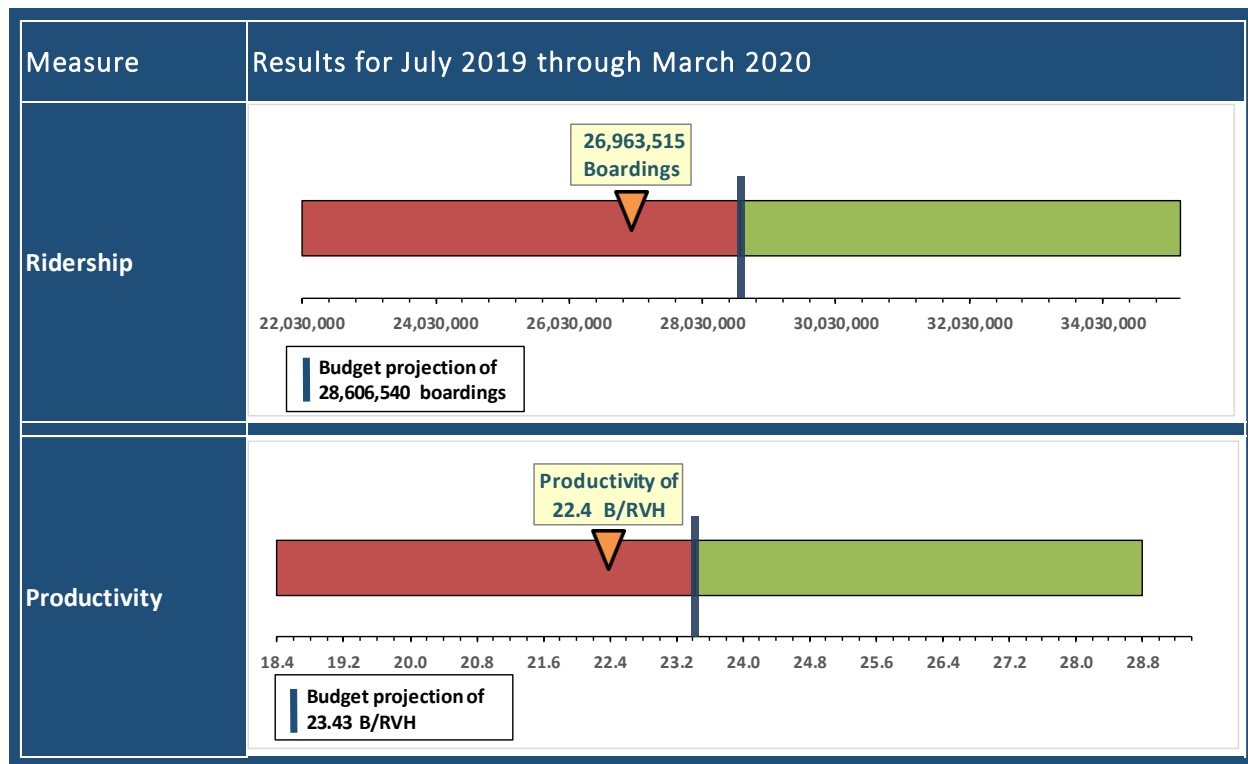
Through the third quarter of FY 2019-20, OC Bus services performed above standard across all modes.

OCTA staff will continue to monitor performance in this area and work with the contractor to sustain or improve overall performance.

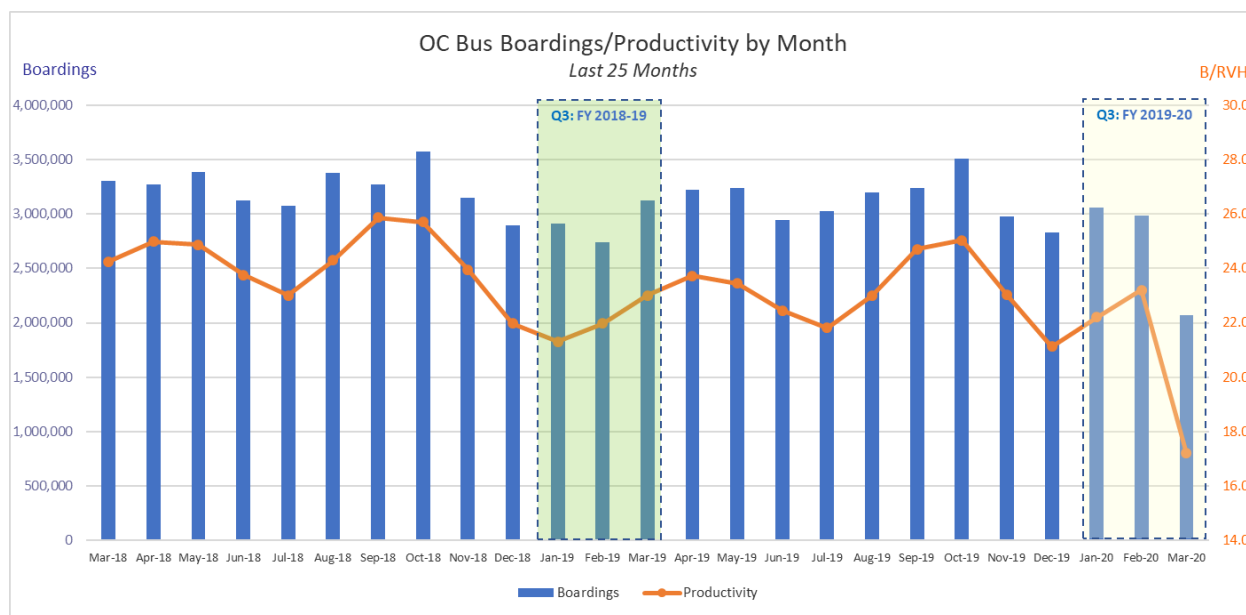
## Ridership and Productivity – OC Bus

Ridership (or boardings) is the number of rides taken by passengers using public transit and is influenced by the level of service provided, weather, economy, and seasonal variations in demand. Productivity is an industry measure that counts the average number of boardings for each RVH that is operated. RVH is any 60-minute increment of time that a vehicle is available for passengers within the scheduled hours of service, excluding deadhead (a non-revenue movement of a transit vehicle to position it for service). Boardings per RVH (B/RVH) is calculated by taking the boardings and dividing it by the number of RVH operated.

Through the third quarter of FY 2019-20, both ridership and productivity for OC Bus service were significantly lower than budgeted projections, down by 5.7 percent and 4.5 percent, respectively.



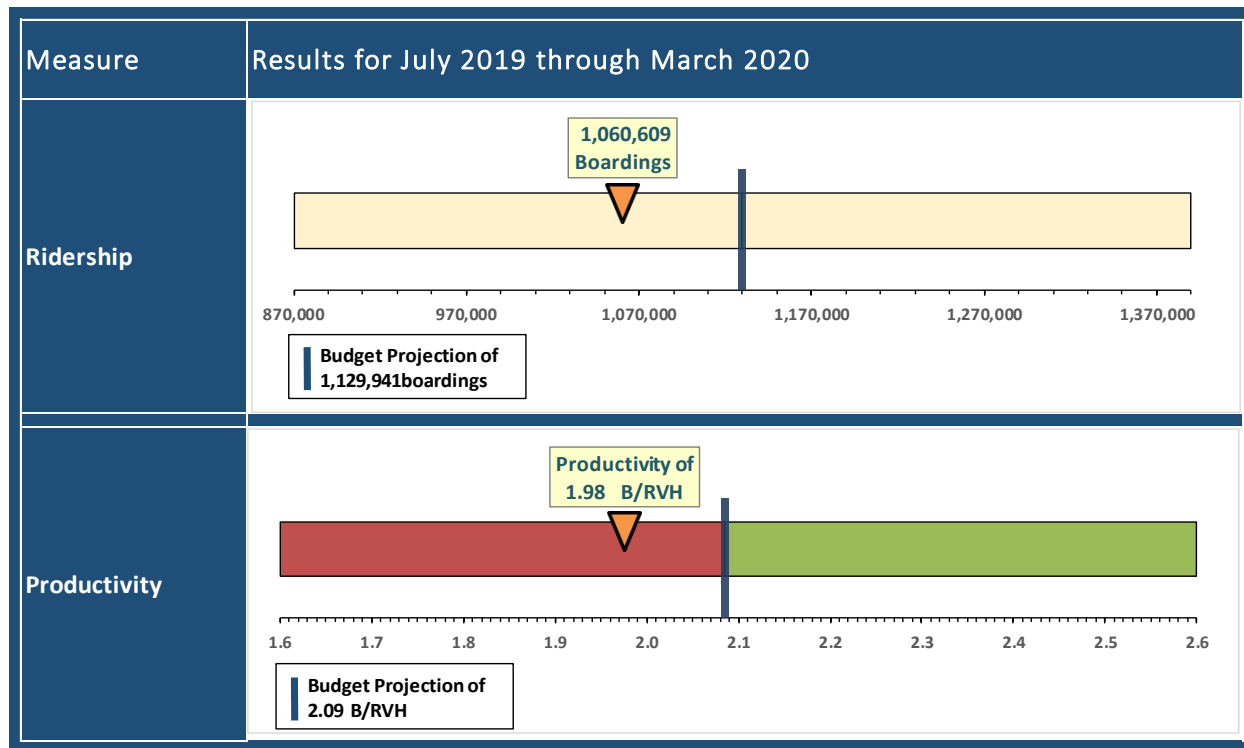
The ridership and productivity for the third quarter, as shown on the following chart, reveals a trend severely impacted by the COVID-19 pandemic that resulted in significant changes to travel patterns. The national and state level orders related to the pandemic caused a substantial drop in ridership and productivity. Average weekday ridership at the close of the month was less than 35,000, roughly 30 percent of the average weekday ridership before the “Safe at Home” orders went into effect. Ridership and productivity levels are expected to remain well below pre-COVID-19 pandemic levels until well after the travel restrictions are lifted.



## Ridership and Productivity – OC ACCESS

(Primary Service Provider and Supplemental Taxi)

Through the third quarter of FY 2019-20, the ridership and productivity for OC ACCESS are trending below budgeted projections by 6.1 percent and 5.3 percent, respectively. As with the fixed-route service, ridership and productivity for OC ACCESS was impacted by the initial stages of the COVID-19 pandemic. With recommendations in place that persons 65 years or older or having underlying health issues stay home, many individuals who typically use OC ACCESS service made fewer trips, causing a drop in average daily ridership of 90 percent. Additionally, productivity has been impacted by the requirement for social distancing on OC ACCESS vehicles, as shared rides have been limited.



## Contractor Performance: Fixed-Route

Per Agreement No. C-4-1737 between OCTA and First Transit, Inc. (First Transit), additional measures are tracked to ensure the CFR OC Bus service meets specified standards for safety, customer service, and reliability. When the contractor's monthly performance exceeds the standard as set forth in the agreement, financial incentives are paid to the contractor; conversely, when the monthly performance of the contractor is below the standard as set forth in the agreement, penalties are assessed and are paid to OCTA by the contractor.

Through the third quarter of FY 2019-20, the overall performance of the contracted OC Bus service as determined by the performance categories outlined in the contract was below standard for missed trips and on-time performance.

Table 1 provides the penalties and incentives assessed to the contractor by quarter for FY 2019-20. The incentives paid in the third quarter relate to courtesy and accident frequency, which totaled \$25,200. This brings the year-to-date total up to \$52,100. The total penalties assessed to the contractor during the quarter total \$157,207 resulting in a year-to-date total of \$565,989. Despite improvements compared to the previous quarter, missed trips, unreported accidents and vehicle damage were the primary categories where penalties were assessed.

Table 1: Performance Categories		FY20 Q1	FY20 Q2	FY20 Q3	FY20 Q4	FYTD 19
Penalties	On-Time Performance	\$ (6,000)	\$ (12,000)	\$ (7,000)	\$ -	\$ (25,000)
	Valid Complaints: Per 7,000 boardings	\$ -	\$ -	\$ -	\$ -	\$ -
	Unreported Accident	\$ (85,000)	\$ (20,000)	\$ (30,000)	\$ -	\$ (135,000)
	Accident Frequency Ratio	\$ (20,000)	\$ -	\$ -	\$ -	\$ (20,000)
	Key Positions	\$ -	\$ -	\$ -	\$ -	\$ -
	CHP Terminal Inspections	\$ -	\$ -	\$ -	\$ -	\$ -
	Reports	\$ -	\$ -	\$ -	\$ -	\$ -
	Preventive Maintenance	\$ -	\$ (382)	\$ (1,207)	\$ -	\$ (1,589)
	Road Calls	\$ (1,400)	\$ -	\$ -	\$ -	\$ (1,400)
	Vehicle Damage: Per vehicle per day	\$ -	\$ -	\$ (63,000)	\$ -	\$ (63,000)
	Missed Trips	\$ (166,000)	\$ (98,000)	\$ (56,000)	\$ -	\$ (320,000)
<b>Total</b>		<b>\$ (278,400)</b>	<b>\$ (130,382)</b>	<b>\$ (157,207)</b>	<b>\$ -</b>	<b>\$ (565,989)</b>
Incentives	On-Time Performance	\$ -	\$ -	\$ -	\$ -	\$ -
	Valid Complaints: Per 7,000 boardings	\$ 14,500	\$ 7,400	\$ 15,200	\$ -	\$ 37,100
	Accident Frequency Ratio	\$ -	\$ 5,000	\$ 10,000	\$ -	\$ 15,000
	<b>Total</b>	<b>\$ 14,500</b>	<b>\$ 12,400</b>	<b>\$ 25,200</b>	<b>\$ -</b>	<b>\$ 52,100</b>
Prior Periods Adjustment	AFR	\$ -	\$ (5,000)	\$ -	\$ -	\$ (5,000)
	Key Position	\$ -	\$ -	\$ -	\$ -	\$ -
	<b>Total</b>	<b>\$ -</b>	<b>\$ (5,000)</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ (5,000)</b>
<b>All</b>	<b>Total</b>	<b>\$ (263,900)</b>	<b>\$ (122,982)</b>	<b>\$ (132,007)</b>	<b>\$ -</b>	<b>\$ (518,889)</b>

## Contractor Performance: OC ACCESS

(Primary Service Provider and Supplemental Taxi)

Per Agreement No. C-2-1865 between OCTA and MV Transportation, Inc., additional measures are tracked to ensure OC ACCESS meets the standards for safety, customer service, and reliability. When the contractor's monthly performance exceeds the standard as set forth in the agreement, financial incentives are paid to the contractor; conversely, when the monthly performance of the contractor is below the standard as set forth in the agreement, penalties are assessed and must be paid to OCTA by the contractor.

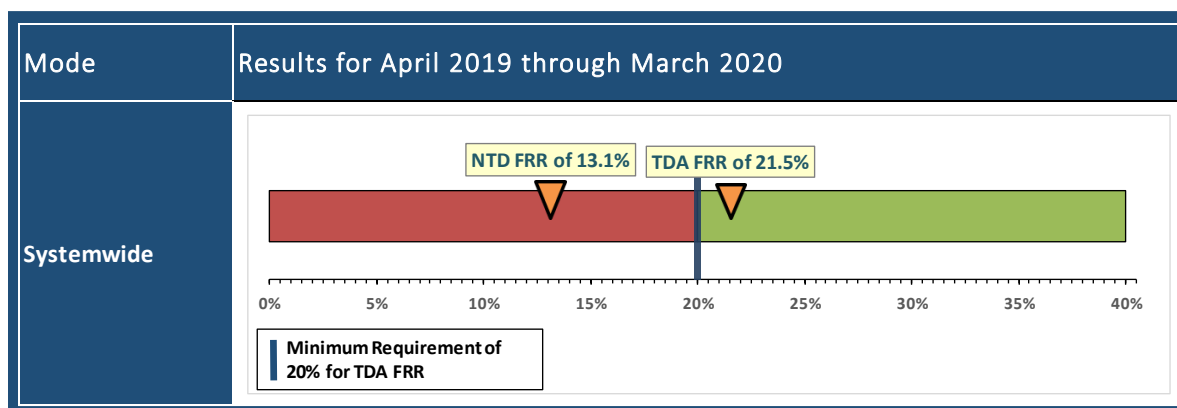
As presented in this report, the overall performance of the contractor providing OC ACCESS service through the third quarter of FY 2019-20 is above standard with respect to courtesy, while below standard for safety and on-time performance. Table 2 below lists, by quarter, the penalties and incentives assessed to the OC ACCESS contractor as established in the agreement. Through the third quarter, there were no incentives awarded to the contractor, but \$90,000 in penalties were assessed. This brings the gross year-to-date total for penalties to \$272,007. Penalties assessed to the contractor were related to performance for passenger productivity, OTP, excessively late trips, missed trips, and an unreported accident.

<b>Table 2:</b>	<b>Performance Categories</b>	<b>FY20 Q1</b>	<b>FY20 Q2</b>	<b>FY20 Q3</b>	<b>FY20 Q4</b>	<b>FYTD 20</b>
<b>Penalties</b>	Passenger Productivity	\$ (10,000)	\$ (20,000)	\$ (30,000)	\$ -	\$ (60,000)
	On-Time Performance	\$ (15,000)	\$ (30,000)	\$ (10,000)	\$ -	\$ (55,000)
	Customer Comments	\$ (2,800)	\$ (3,000)	\$ -	\$ -	\$ (5,800)
	Call Center Hold Times	\$ (5,000)	\$ -	\$ -	\$ -	\$ (5,000)
	Excessively Late Trips	\$ (20,000)	\$ (30,000)	\$ (30,000)	\$ -	\$ (80,000)
	Missed Trips	\$ (5,000)	\$ (30,000)	\$ (15,000)	\$ -	\$ (50,000)
	Unreported Accident	\$ (5,000)	\$ (5,000)	\$ (5,000)	\$ -	\$ (15,000)
	Preventive Maintenance	\$ -	\$ -	\$ -	\$ -	\$ -
	Road calls	\$ (700)	\$ -	\$ -	\$ -	\$ (700)
	Reports	\$ -	\$ -	\$ -	\$ -	\$ -
	Key Positions	\$ -	\$ -	\$ -	\$ -	\$ -
	CHP Terminal Inspections	\$ -	\$ -	\$ -	\$ -	\$ -
	Vehicle Damage	\$ -	\$ -	\$ -	\$ -	\$ -
	Fare Variance	\$ -	\$ (507)	\$ -	\$ -	\$ (507)
	<b>Total</b>	<b>\$ (63,500)</b>	<b>\$ (118,507)</b>	<b>\$ (90,000)</b>	<b>\$ -</b>	<b>\$ (272,007)</b>
<b>Incentives</b>	Passenger Productivity	\$ -	\$ -	\$ -	\$ -	\$ -
	On-Time Performance	\$ -	\$ -	\$ -	\$ -	\$ -
	Excessively Late Trips	\$ -	\$ -	\$ -	\$ -	\$ -
	Missed Trips	\$ -	\$ -	\$ -	\$ -	\$ -
	<b>Total</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
<b>Prior Periods Adjustment</b>	Customer Comments	\$ -	\$ -	\$ -	\$ -	\$ -
	Unreported Accident	\$ 10,000	\$ -	\$ -	\$ -	\$ 10,000
	<b>Total</b>	<b>\$ 10,000</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 10,000</b>
<b>All</b>	<b>Total</b>	<b>\$ (53,500)</b>	<b>\$ (118,507)</b>	<b>\$ (90,000)</b>	<b>\$ -</b>	<b>\$ (262,007)</b>

## Farebox Recovery Ratio

Farebox Recovery Ratio (FRR) is a measure of the proportion of operating costs recovered by passenger fares, calculated by dividing the farebox revenue by total operating expenses. A minimum FRR of 20 percent for all service is required by the Transportation Development Act in order for transit agencies to receive the state sales tax available for public transit purposes. In an effort to normalize seasonal fluctuations, data shown below reflects actuals over the last 12 months from April 2019 through March 2020.

FRR, based on the National Transit Database definition in which only passenger fares are included under revenue, did not meet the 20 percent goal. However, as a result of the passage of Senate Bill No. 508 (SB 508), OCTA was able to adjust the FRR to include local funds. SB 508 states, *“If fare revenues are insufficient to meet the applicable ratio of fare revenues to operating cost required by this article, an operator may satisfy that requirement by supplementing its fare revenues with local funds. As used in this section, “local funds” are any non-federal or non-state grant funds or other revenue generated by, earned by, or distributed to an operator.”* After incorporating property tax revenue, advertising revenue, and Measure M fare stabilization, the adjusted FRR was 21.5 percent, a decrease of 0.8 percent from the previous quarter and a 3.9 percent drop from the same quarter last year.



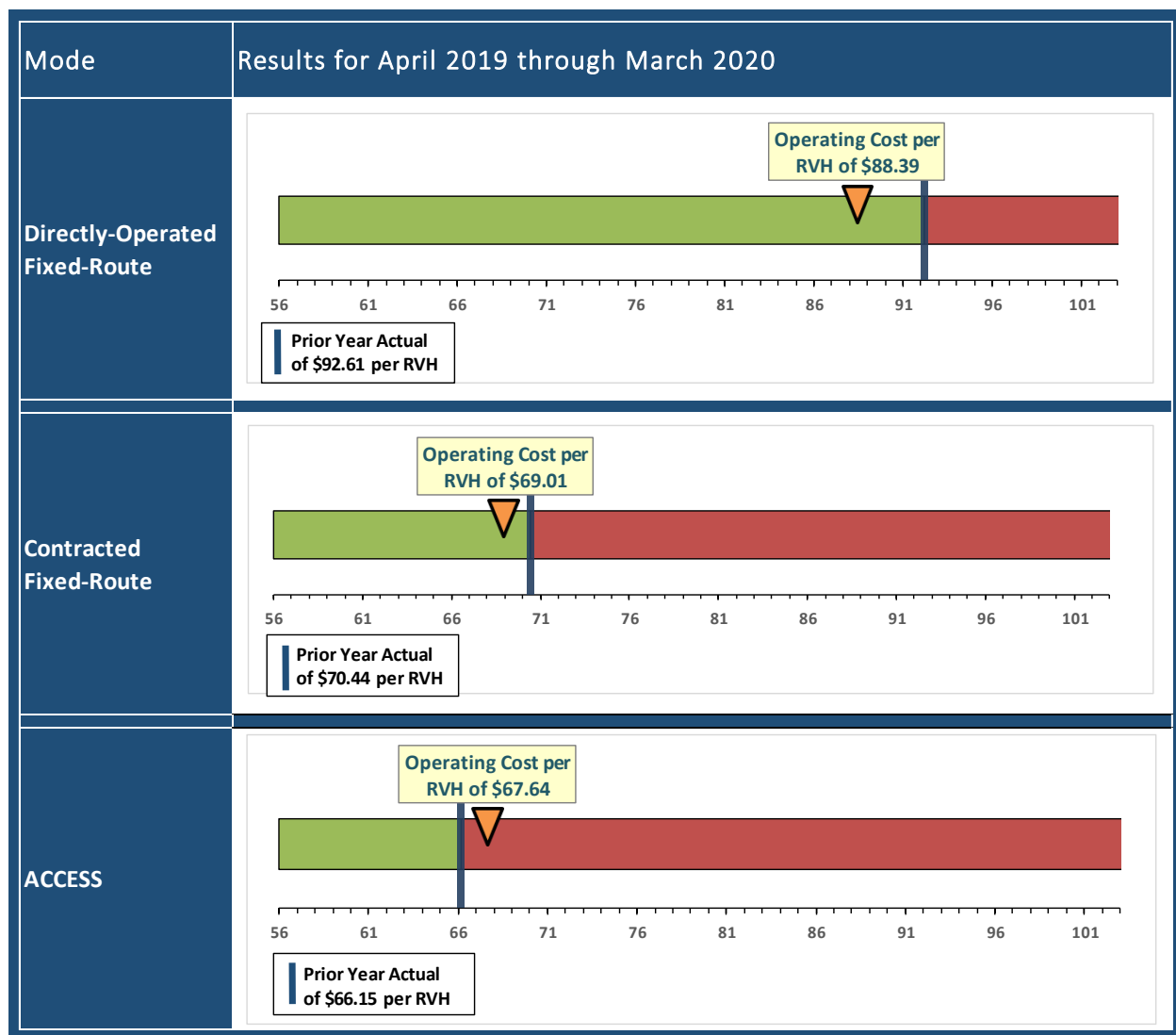
**Note:**

- National Transit Database (NTD) FRR consists of only passenger fares
- Transportation Development Act (TDA) FRR includes passenger fares, property tax revenue, advertising revenue and Measure M fare stabilization

## Operating Cost per Revenue Vehicle Hour

Cost per RVH is one of the industry standards used to measure the cost efficiency of transit service. It is derived by dividing operating expenses by RVH. In order to provide a more comparable illustration, all metrics below are calculated based on direct operating cost, which excludes capital, general administrative, and other overhead costs.

Similar to the FRR, the statistics below depict actuals over the last 12 months. All modes operated at a lower cost per RVH than the same 12-month period of the prior year except for OC ACCESS due to the Alternative Fuel Tax Credit for fixed-route services from the period of January 2018 through December 2019 being received in March 2020. The difference in cost per RVH from the prior FY was a 4.1 percent decrease in DOFR, 4.4 percent decrease in CFR, and 2.2 percent increase in OC ACCESS.





## Performance Evaluation by Route

Continuing efforts are underway to better understand, evaluate, and improve route performance. Performance evaluation is important because it provides:

- A better understanding of where resources are being applied;
- A measure of how well services are being delivered;
- A measure of how well these services are used; and
- An objective basis for decisions regarding future service changes and service deployment.

The tables on the following pages summarize route-level performance through the third quarter. The first three tables present the route-level performance sorted by routes with the highest net subsidy per boarding to routes with a lower net subsidy per boarding, and the remaining three tables present the same information sorted by routes that have the highest boardings to routes with a lower level of boardings.

A route guide listing all of the routes and their points of origins and destinations is provided after the route-level performance tables. Route types are grouped by route numbers as follows:

- **Routes 1 to 99** - Local routes include two sub-categories:
  - **Major:** These routes operate as frequent as every 15 minutes during peak times. Major routes operate seven days a week throughout the day. Together, the Major routes form a grid on arterial streets throughout the highest transit propensity portions of the OC Bus service area, primarily in northern parts of the county.
  - **Local:** These routes operate on arterials within the grid created by the Major routes, but at lower frequencies. Local routes also operate in parts of Orange County with lower transit demand. Most Local routes operate seven days per week, however some operate on weekdays only.
- **Routes 100 to 199:** Community routes to connect pockets of transit demand with major destinations and offer local circulation. Routes tend to be less direct than Local routes, serving neighborhoods and destinations off the arterial grid. Approximately half of Community routes operate seven days per week.
- **Routes 200 to 299:** Intra-county express routes operate on weekdays only at peak times and connect riders over long distances to destinations within Orange County, using freeways to access destinations.
- **Routes 400 to 499:** Stationlink routes are rail feeder services designed to connect Metrolink stations to nearby employment destinations. These routes have relatively short alignments, with schedules tied to Metrolink arrivals and departures. They operate during weekday peak hours only, in the peak direction, from the station to destinations in the morning and the reverse in the evening.
- **Routes 500 to 599:** Bravo! routes are limited-stop services operated with branded vehicles.
- **Routes 600 to 699:** *Seasonal or Temporary routes (these are not included on the following charts)* such as the OC Fair Express.
- **Routes 700 to 799:** Inter-county express routes that operate on weekdays only at peak times and connects riders over long distances to destinations outside of Orange County, often using freeways to access destinations.



**OCTA Operating Statistics By Route for Local and Community Services (Sorted by Subsidy per Boarding)**  
Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	Cost/SH	Direct Cost/VSH	Cost/VSM	Board/VSH	VSH	Bus Count		
														40 FT	32 FT	60 FT
862	C	5.3%	\$ 17.08	\$ 10.72	\$ 5.43	\$ 0.93	\$ 0.90	38,709	\$ 135.08	\$ 76.79	\$ 17.57	7.93	4,883	2	-	-
123	N	8.7%	13.83	5.88	3.98	0.97	0.94	18,076	83.55	44.53	6.46	7.73	2,337	4	-	-
085	S	8.0%	12.70	7.08	4.91	0.71	1.05	50,810	108.91	71.33	8.79	8.36	6,079	2	-	-
001	S	7.1%	12.01	6.91	4.64	0.46	0.88	385,710	145.17	88.99	9.02	11.68	33,018	10	-	-
529	C	7.3%	11.66	6.53	4.39	0.74	0.87	243,859	150.37	90.84	13.14	12.76	19,110	10	-	-
153	N	7.8%	11.62	6.66	4.51	0.45	0.95	80,280	108.01	71.40	9.00	8.91	9,011	2	-	-
087	S	8.5%	10.98	6.07	4.21	0.70	0.95	110,333	110.33	71.92	7.37	9.82	5,215	2	-	-
076	C	8.4%	10.82	6.12	4.11	0.59	0.94	60,494	134.91	81.36	11.60	12.08	5,008	2	-	-
178	C	8.8%	10.70	6.03	4.09	0.58	0.97	62,064	107.35	70.91	8.64	9.68	6,413	2	-	-
177	S	11.2%	9.41	5.10	3.45	0.86	1.08	62,375	109.23	71.30	8.53	11.34	5,500	3	-	-
083	C	10.2%	8.52	4.86	3.27	0.39	0.92	414,666	146.60	89.80	7.76	16.20	25,603	9	-	-
086	C	11.1%	8.27	4.57	3.17	0.53	0.97	101,451	107.24	71.11	8.29	12.32	8,234	3	-	-
091	S	12.8%	8.07	4.46	3.10	0.51	1.11	280,858	110.26	72.09	7.72	12.72	22,087	8	-	-
167	C	12.0%	7.69	4.21	2.86	0.62	0.83	144,808	109.76	71.16	8.83	13.66	10,601	5	-	-
090	S	13.6%	7.46	4.03	2.80	0.63	1.07	229,348	112.27	72.34	7.51	14.21	16,139	8	-	-
129	N	12.8%	7.36	4.15	2.82	0.39	1.00	139,376	108.97	71.61	9.53	13.67	10,198	3	-	-
143	N	11.5%	7.32	4.12	2.80	0.40	0.90	135,843	107.28	69.72	9.63	13.72	9,903	3	-	-
079	C	13.2%	6.73	3.77	2.62	0.34	0.97	317,759	108.40	71.20	9.58	14.74	21,558	6	-	-
066	N	12.2%	6.58	3.76	2.52	0.30	0.87	296,926	138.28	83.10	13.03	19.35	15,346	5	-	-
560	C	12.7%	6.54	3.65	2.45	0.44	0.89	533,808	145.26	87.81	12.69	20.79	25,681	13	-	-
150	C	15.3%	6.22	3.37	2.29	0.56	1.02	126,948	112.65	71.32	11.17	16.86	7,528	4	-	-
059	C	14.0%	6.15	3.45	2.39	0.31	0.95	404,540	110.42	71.63	10.02	16.25	24,900	7	-	-
089	S	15.2%	6.03	3.35	2.32	0.36	1.02	245,835	108.07	71.05	8.67	16.15	15,219	5	-	-
082	S	17.0%	6.00	3.18	2.20	0.62	1.11	57,638	119.82	72.71	8.33	18.47	3,120	2	-	-
026	N	13.8%	5.95	3.31	2.30	0.34	0.90	320,070	108.89	71.17	10.82	16.75	19,109	6	-	-
025	N	14.2%	5.89	3.36	2.33	0.20	0.94	266,672	108.83	71.47	9.11	16.43	16,229	3	-	-
055	C	15.4%	5.88	3.37	2.26	0.25	1.02	921,140	139.73	84.20	12.56	21.00	43,866	13	-	-
050	N	13.0%	5.83	3.33	2.23	0.27	0.83	904,877	139.89	84.40	12.38	21.88	41,353	5	-	6
071	N	14.8%	5.76	3.22	2.23	0.31	0.95	517,972	109.77	71.57	8.82	17.17	30,175	9	-	-
037	N	14.3%	5.75	3.23	2.17	0.35	0.90	777,464	146.01	88.16	11.77	23.19	33,519	15	-	-
072	C	14.5%	5.72	3.28	2.20	0.24	0.93	364,373	136.35	82.36	11.03	21.25	17,149	4	1	-
054	N	14.5%	5.70	3.21	2.16	0.33	0.91	869,506	140.52	84.77	12.56	22.39	38,833	16	-	-
029	N	15.1%	5.34	3.06	2.06	0.22	0.91	1243,921	141.93	85.74	11.99	23.55	52,831	5	-	7
543	N	16.2%	4.92	2.78	1.86	0.28	0.90	641,470	142.29	85.89	12.95	25.70	24,961	10	-	-
035	N	15.9%	4.81	2.65	1.84	0.32	0.85	569,160	110.70	71.54	9.68	20.76	27,411	10	-	-
033	N	15.5%	4.80	2.64	1.83	0.33	0.82	269,878	107.99	71.36	8.72	20.43	13,208	5	-	-
070	C	17.3%	4.77	2.66	1.84	0.27	0.94	652,545	111.93	71.95	9.56	20.56	31,732	10	-	-
047	C	17.9%	4.76	2.71	1.82	0.23	0.99	1,489,528	140.73	84.90	12.63	25.49	58,435	19	-	-
030	N	15.9%	4.69	2.62	1.82	0.25	0.84	494,816	107.70	71.41	8.33	20.39	24,271	7	-	-
057	C	17.3%	4.69	2.66	1.78	0.25	0.93	1,410,344	157.85	95.48	14.80	29.38	48,009	4	-	11
046	N	18.3%	4.42	2.42	1.68	0.32	0.91	452,008	108.37	71.53	9.47	21.73	20,797	8	-	-
038	N	17.6%	4.35	2.37	1.64	0.34	0.86	732,153	110.83	71.57	9.21	22.65	32,318	14	-	-
060	C	17.8%	4.21	2.42	1.63	0.16	0.91	1,360,015	141.12	85.19	12.32	28.65	47,464	12	-	-
053	C	18.6%	4.16	2.38	1.60	0.18	0.91	973,836	144.76	86.98	15.65	29.65	32,844	10	-	-
053X	C	19.9%	3.90	2.22	1.49	0.19	0.92	483,523	128.29	77.10	12.39	27.69	17,463	5	-	-
043	N	20.4%	3.79	2.19	1.47	0.13	0.94	1,515,585	138.07	82.94	13.75	29.96	50,581	11	-	-
057X	C	22.0%	3.62	2.00	1.35	0.27	0.94	775,154	128.58	77.41	11.80	29.98	25,858	3	-	6
042	N	19.5%	3.57	1.98	1.38	0.21	0.81	1,098,476	109.80	71.50	9.85	26.31	41,750	13	-	-
066	C	22.8%	3.39	1.94	1.30	0.15	0.96	1,467,798	137.37	82.55	13.89	32.68	44,908	12	-	-
064	C	22.2%	3.21	1.82	1.22	0.17	0.87	1,083,794	143.03	85.97	14.58	36.60	29,611	10	-	-
064X	C	23.8%	2.95	1.67	1.12	0.16	0.87	435,532	128.35	77.19	12.24	35.14	12,395	4	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.

(2) Bus count for routes 53X, 57X and 64X are estimated based on total route 53, 57 and 64 equipment requirements.

(3) C under Zone is Central County, N is North County and S is South County.



**OCTA Operating Statistics By Route for Express Service (Sorted by Subsidy per Boarding)**  
Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count		
														40 FT	32 FT	60 FT
213	N	2.3%	\$ 51.96	\$ 25.02	\$ 15.28	\$ 11.66	\$ 0.96	7,691	\$ 156.25	\$ 96.51	\$ 7.80	3.79	2,031	5	-	-
721	N	4.6%	44.17	24.97	15.67	3.53	1.97	15,223	225.20	140.41	8.71	5.29	2,880	3	-	-
701	C	9.7%	27.22	14.93	9.38	2.91	2.62	18,464	259.39	161.29	10.84	9.63	1,917	3	-	-
206	C	6.1%	24.53	10.21	6.24	8.08	1.07	8,872	153.54	92.71	7.81	8.77	1,012	4	-	-
794	C	20.4%	23.40	13.50	8.25	1.65	5.57	21,681	195.62	131.78	7.34	7.16	3,027	2	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.

(2) C under Zone is Central County, N is North County and S is South County.



**OCTA Operating Statistics By Route for Stationlink Service (Sorted by Subsidy per Boarding)**  
Fiscal Year 2019-20 Through Q3

Route	Zone	Submode	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count		
															40 FT	32 FT	60 FT
463	C	RCL	3.5%	\$ 28.66	\$ 14.57	\$ 9.82	\$ 4.27	\$ 0.89	12,592	\$ 143.03	\$ 85.43	\$ 13.33	5.66	2,226	3	-	-
480	C	RCL	8.2%	13.60	6.22	4.20	3.18	0.93	16,918	142.46	85.50	12.77	12.55	1,348	3	-	-
472	C	RCL	9.4%	11.56	5.29	3.56	2.71	0.92	19,879	135.42	84.72	11.84	13.86	1,434	3	-	-
453	N	RCL	7.7%	10.40	5.20	3.51	1.69	0.73	21,205	141.03	84.99	24.07	14.94	1,419	2	-	-
473	C	RCL	14.7%	7.29	3.34	2.25	1.70	0.96	31,577	150.69	85.47	13.13	22.97	1,374	3	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.

(2) C under Zone is Central County, N is North County and S is South County.



**OCTA Operating Statistics By Route for Local and Community Services (Sorted by Boardings)**  
Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	Cost/VSH	Direct Cost/VSH	Cost/VSM	Board/VSH	VSH	Bus Count		
														40 FT	32 FT	60 FT
043	N	20.4%	\$ 3.79	\$ 2.19	\$ 1.47	\$ 0.13	\$ 0.94	1,515,585	\$ 138.07	\$ 82.94	\$ 13.75	29.96	50,581	11	-	-
047	C	17.9%	4.76	2.71	1.82	0.23	0.99	1,489,528	140.73	84.90	12.63	25.49	58,435	19	-	-
066	C	22.8%	3.39	1.94	1.30	0.15	0.96	1,467,798	137.37	82.55	13.89	32.68	44,908	12	-	-
057	C	17.3%	4.69	2.66	1.78	0.25	0.93	1,410,344	157.85	95.48	14.80	29.38	48,009	4	-	11
060	C	17.8%	4.21	2.42	1.63	0.16	0.87	1,360,015	141.12	85.19	12.32	28.65	47,464	12	-	-
029	N	15.1%	5.34	3.06	2.06	0.22	0.91	1,243,921	141.93	85.74	11.99	23.55	52,831	5	-	7
042	N	19.5%	3.57	1.98	1.38	0.21	0.81	1,098,476	109.80	71.50	9.85	26.31	41,750	13	-	-
064	C	22.2%	3.21	1.82	1.22	0.17	0.87	1,083,794	143.03	85.97	14.58	36.60	29,611	10	-	-
053	C	18.6%	4.16	2.38	1.60	0.18	0.91	973,836	144.76	86.98	15.65	29.65	32,844	10	-	-
055	C	15.4%	5.88	3.37	2.26	0.25	1.02	921,140	139.73	84.20	12.56	21.00	43,866	13	-	-
050	N	13.0%	5.83	3.33	2.23	0.27	0.83	904,877	139.89	84.40	12.38	21.88	41,353	5	-	6
054	N	14.5%	5.70	3.21	2.16	0.33	0.91	869,506	140.52	84.77	12.56	22.39	38,833	16	-	-
037	N	14.3%	5.75	3.23	2.17	0.35	0.90	777,464	146.01	88.16	11.77	23.19	33,519	15	-	-
057X	C	22.0%	3.62	2.00	1.35	0.27	0.94	775,154	128.58	77.41	11.80	29.98	25,858	3	-	6
038	N	17.6%	4.35	2.37	1.64	0.34	0.86	732,153	110.37	71.57	9.21	22.65	32,318	14	-	-
070	C	17.3%	4.77	2.66	1.84	0.27	0.94	652,545	111.93	71.95	9.56	20.56	31,732	10	-	-
543	N	16.2%	4.92	2.78	1.86	0.28	0.90	641,470	142.29	85.89	12.95	25.70	24,961	10	-	-
035	N	15.9%	4.81	2.65	1.84	0.32	0.85	569,160	110.70	71.54	9.68	20.76	27,411	10	-	-
560	C	12.7%	6.54	3.65	2.45	0.44	0.89	533,808	145.26	87.81	12.69	20.79	25,681	13	-	-
071	N	14.8%	5.76	3.22	2.23	0.31	0.95	517,972	109.77	71.57	8.82	17.17	30,175	9	-	-
030	N	15.9%	4.69	2.62	1.82	0.25	0.84	494,816	107.70	71.41	8.33	20.39	24,271	7	-	-
053X	C	19.9%	3.90	2.22	1.49	0.19	0.92	483,523	128.29	77.10	12.39	27.69	17,463	5	-	-
046	N	18.3%	4.42	2.42	1.68	0.32	0.91	452,008	108.83	71.53	9.47	21.73	20,797	8	-	-
064X	C	23.8%	2.95	1.67	1.12	0.16	0.87	435,532	128.35	77.19	12.24	35.14	12,395	4	-	-
083	C	10.2%	8.52	4.86	3.27	0.39	0.92	414,666	146.60	89.80	7.76	16.20	25,603	9	-	-
059	C	14.0%	6.15	3.45	2.39	0.31	0.95	404,540	110.42	71.63	10.02	16.25	24,900	7	-	-
001	S	7.1%	12.01	6.91	4.64	0.46	0.88	385,710	145.17	88.99	9.02	11.68	33,018	10	-	-
072	C	14.5%	5.72	3.28	2.20	0.24	0.93	364,373	136.35	82.36	11.03	21.25	17,149	4	1	-
026	N	13.8%	5.95	3.31	2.30	0.34	0.90	320,070	108.89	71.17	10.82	16.75	19,109	6	-	-
079	C	13.2%	6.73	3.77	2.62	0.34	0.97	317,759	108.40	71.20	9.58	14.74	21,558	6	-	-
056	N	12.2%	6.58	3.76	2.52	0.30	0.87	296,926	138.28	83.10	13.03	19.35	15,346	5	-	-
091	S	12.8%	8.07	4.46	3.10	0.51	1.11	280,868	110.26	72.09	7.72	12.72	22,087	8	-	-
033	N	15.5%	4.80	2.64	1.83	0.33	0.82	269,878	107.99	71.36	8.72	20.43	13,208	5	-	-
025	N	14.2%	5.89	3.36	2.33	0.20	0.94	266,672	108.83	71.47	9.11	16.43	16,229	3	-	-
089	S	15.2%	6.03	3.35	2.32	0.36	1.02	245,835	108.07	71.05	8.67	16.15	15,219	5	-	-
529	C	7.3%	11.66	6.53	4.39	0.74	0.87	243,869	150.37	90.84	13.14	12.76	19,110	10	-	-
090	S	13.6%	7.46	4.03	2.80	0.63	1.07	229,348	112.27	72.34	7.51	14.21	16,139	8	-	-
167	C	12.0%	7.69	4.21	2.86	0.62	0.97	144,808	109.76	71.16	8.83	13.66	10,601	5	-	-
129	N	12.6%	7.36	4.15	2.82	0.39	1.00	139,376	108.97	71.61	9.53	13.67	10,983	3	-	-
143	N	11.5%	7.32	4.12	2.80	0.40	0.90	135,843	107.28	69.72	9.63	13.72	9,903	3	-	-
150	C	15.3%	6.22	3.37	2.29	0.56	1.02	126,948	112.65	71.32	11.17	16.86	7,528	4	-	-
086	C	11.1%	8.27	4.57	3.17	0.53	0.97	101,451	107.24	71.11	8.29	12.32	8,234	3	-	-
153	N	7.8%	11.62	6.66	4.51	0.45	0.95	80,280	108.01	71.40	9.00	8.91	9,011	2	-	-
177	S	11.2%	9.41	5.10	3.45	0.86	1.08	62,375	109.23	71.30	8.53	11.34	5,500	3	-	-
178	C	8.8%	10.70	6.03	4.09	0.58	0.97	62,064	107.35	70.91	8.64	9.68	6,413	2	-	-
076	C	8.4%	10.82	6.12	4.11	0.59	0.94	60,494	134.91	81.36	11.60	12.08	5,008	2	-	-
082	S	17.0%	6.00	3.18	2.20	0.62	1.11	57,638	119.82	72.71	8.33	18.47	3,120	2	-	-
087	S	8.5%	10.98	6.07	4.21	0.70	0.95	51,966	110.33	71.92	7.37	9.82	5,215	2	-	-
085	S	8.0%	12.70	7.08	4.91	0.71	1.05	50,871	108.91	71.33	8.79	8.36	6,079	2	-	-
862	C	5.3%	17.08	10.72	5.43	0.93	0.90	38,709	135.08	76.79	17.57	7.93	4,883	2	-	-
123	N	8.7%	13.83	5.88	3.98	0.97	0.94	18,076	83.55	44.53	6.46	7.73	2,337	4	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.

(2) Bus count for routes 53X, 57X and 64X are estimated based on total route 53, 57 and 64 equipment requirements.

(3) C under Zone is Central County, N is North County and S is South County.



**OCTA Operating Statistics By Route for Express Service (Sorted by Boardings)**  
Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count		
														40 FT	32 FT	60 FT
794	C	20.4%	\$ 23.40	\$ 13.50	\$ 8.25	\$ 1.65	\$ 5.57	21,681	\$ 195.62	\$ 131.78	\$ 7.34	7.16	3,027	2	-	-
701	C	9.7%	27.22	14.93	9.38	2.91	2.62	18,464	259.39	161.29	10.84	9.63	1,917	3	-	-
721	N	4.6%	44.17	24.97	15.67	3.53	1.97	15,223	225.20	140.41	8.71	5.29	2,880	3	-	-
206	C	6.1%	24.53	10.21	6.24	8.08	1.07	8,872	153.54	92.71	7.81	8.77	1,012	4	-	-
213	N	2.3%	51.96	25.02	15.28	11.66	0.96	7,691	156.25	96.51	7.80	3.79	2,031	5	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.

(2) C under Zone is Central County, N is North County and S is South County.



**OCTA Operating Statistics By Route for Stationlink Service (Sorted by Boardings)**  
Fiscal Year 2019-20 Through Q3

Route	Zone	Farebox	Subsidy per Boarding	Direct Subsidy	Indirect Subsidy	"Capital Subsidy" Per Boarding	Revenue per Boarding	Boardings	CostVSH	Direct CostVSH	CostVSM	BoardVSH	VSH	Bus Count		
														40 FT	32 FT	60 FT
473	C	14.7%	\$ 7.29	\$ 3.34	\$ 2.25	\$ 1.70	\$ 0.96	31,577	\$ 150.69	\$ 85.47	\$ 13.13	22.97	1,374	3	-	-
453	N	7.7%	10.40	5.20	3.51	1.69	0.73	21,205	141.03	84.99	24.07	14.94	1,419	2	-	-
472	C	9.4%	11.56	5.29	3.56	2.71	0.92	19,879	135.42	84.72	11.84	13.86	1,434	3	-	-
480	C	8.2%	13.60	6.22	4.20	3.18	0.93	16,918	142.46	85.50	12.77	12.55	1,348	3	-	-
463	C	3.5%	28.66	14.57	9.82	4.27	0.89	12,592	143.03	85.43	13.33	5.66	2,226	3	-	-

(1) Total bus count (429) is based on PM weekday equipment requirements.

(2) C under Zone is Central County, N is North County and S is South County.

## Route Reference Table

Route	Route	Route Description	Main Street	Route Category
1	1	Long Beach - San Clemente	via Pacific Coast Hwy	LOCAL
25	25	Fullerton - Huntington Beach	via Knott Ave/ Goldenwest St	LOCAL
26	26	Fullerton - Placentia	via Commonwealth Ave/ Yorba Linda Blvd	LOCAL
29	29	La Habra - Huntington Beach	via Beach Blvd	LOCAL
30	30	Cerritos - Anaheim	via Orangethorpe Ave	LOCAL
33	33	Fullerton - Huntington Beach	via Magnolia St	LOCAL
35	35	Fullerton - Costa Mesa	via Brookhurst St	LOCAL
37	37	La Habra - Fountain Valley	via Euclid St	LOCAL
38	38	Lakewood - Anaheim Hills	via Del Amo Blvd/ La Palma Ave	LOCAL
42	42	Seal Beach - Orange	via Seal Beach Blvd/ Los Alamitos Blvd/ Lincoln Ave	LOCAL
43	43	Fullerton - Costa Mesa	via Harbor Blvd	LOCAL
46	46	Long Beach - Orange	via Ball Road/ Taft Ave	LOCAL
47	47	Fullerton - Balboa	via Anaheim Blvd/ Fairview St	LOCAL
50	50	Long Beach - Orange	via Katella Ave	LOCAL
53	53/53X	Anaheim - Irvine	via Main St	LOCAL
54	54	Garden Grove - Orange	via Chapman Ave	LOCAL
55	55	Santa Ana - Newport Beach	via Standard Ave/ Bristol St/ Fairview St/ 17th St	LOCAL
56	56	Garden Grove - Orange	via Garden Grove Blvd	LOCAL
57	57/57X	Brea - Newport Beach	via State College Blvd/ Bristol St	LOCAL
59	59	Anaheim - Irvine	via Kraemer Blvd/ Glassell St/ Grand Ave/ Von Karman Ave	LOCAL
60	60	Long Beach - Tustin	via Westminster Ave/ 17th St	LOCAL
64	64/64X	Huntington Beach - Tustin	via Bolsa Ave/ 1st St	LOCAL
66	66	Huntington Beach - Irvine	via McFadden Ave/ Walnut Ave	LOCAL
70	70	Sunset Beach - Tustin	via Edinger Ave	LOCAL
71	71	Yorba Linda - Newport Beach	via Tustin Ave/ Red Hill Ave/ Newport Blvd	LOCAL
72	72	Sunset Beach - Tustin	via Warner Ave	LOCAL
76	76	Huntington Beach - John Wayne Airport	via Talbert Ave/ MacArthur Blvd	LOCAL
79	79	Tustin - Newport Beach	via Bryan Ave/ Culver Dr/ University Ave	LOCAL
82	82	Foothill Ranch - Rancho Santa Margarita	via Portola Pkwy/ Santa Margarita Pkwy	LOCAL
83	83	Anaheim - Laguna Hills	via 5 Fwy/ Main St	LOCAL
85	85	Mission Viejo - Laguna Niguel	via Marguerite Pkwy/ Crown Valley Pkwy	LOCAL
86	86	Costa Mesa - Mission Viejo	via Alton Pkwy/ Jeronimo Rd	LOCAL
87	87	Rancho Santa Margarita - Laguna Niguel	via Alicia Pkwy	LOCAL
89	89	Mission Viejo - Laguna Beach	via El Toro Rd/ Laguna Canyon Rd	LOCAL
90	90	Tustin - Dana Point	via Irvine Center Dr/ Moulton Pkwy/ Golden Lantern St	LOCAL
91	91	Laguna Hills - San Clemente	via Paseo de Valencia/ Camino Capistrano/ Del Obispo St	LOCAL
123	123	Anaheim - Huntington Beach	via Malvern Ave/ Valley View / Bolsa Chica	COMMUNITY
129	129	La Habra - Anaheim	via La Habra Blvd/ Brea Blvd/ Birch St/ Kraemer Blvd	COMMUNITY
143	143	La Habra - Brea	via Whittier Blvd/ Harbor Blvd/ Brea Blvd/ Birch St	COMMUNITY
150	150	Santa Ana - Costa Mesa	via Fairview St/ Flower St	COMMUNITY
153	153	Brea - Anaheim	via Placentia Ave	COMMUNITY
167	167	Orange - Irvine	via Irvine Ave/ Hewes St/ Jeffrey Rd	COMMUNITY
177	177	Foothill Ranch - Laguna Hills	via Lake Forest Dr/ Muirlands Blvd/ Los Alisos Blvd	COMMUNITY
178	178	Huntington Beach - Irvine	via Adams Ave/ Birch St/ Campus Dr	COMMUNITY
862	862	Downtown Santa Ana Shuttle	via Civic Center Dr	COMMUNITY
206	206	Santa Ana - Lake Forest Express	via 5 Fwy	EXPRESS BUS
213	213	Brea - Irvine Express	via 55 Fwy	EXPRESS BUS
453	453	Orange Transportation Center - St. Joseph's Hospital	via Chapman Ave/ Main St/ La Veta Ave	STATIONLINK
463	463	Santa Ana Regional transportation Center - Hutton Centre	via Grand Ave	STATIONLINK
472	472	Tustin Metrolink Station - Irvine Business Complex	via Edinger Ave/ Red Hill Ave/ Campus Dr/ Jamboree Rd	STATIONLINK
473	473	Tustin Metrolink Station - U.C.I.	via Edinger Ave/ Harvard Ave	STATIONLINK
480	480	Irvine Metrolink Station - Lake Forest	via Alton Pkwy/ Bake Pkwy/ Lake Forest Dr	STATIONLINK
529	529	Fullerton - Huntington Beach	via Beach Blvd	BRAVO
543	543	Fullerton Transportation Center - Santa Ana	via Harbor Blvd	BRAVO
560	560	Santa Ana - Long Beach	via 17th St/ Westminster Blvd	BRAVO
701	701	Huntington Beach - Los Angeles Express	via 405 Fwy/ 605 Fwy/ 105 Fwy/ 110 Fwy	EXPRESS BUS
721	721	Fullerton - Los Angeles Express	via 110 Fwy/ 91 Fwy	EXPRESS BUS
794	794	Riverside / Corona - South Coast Metro Express	via 91 Fwy/ 55 Fwy	EXPRESS BUS

## OC Bus 360° Plan: Performance to Date

To address declining bus ridership, the OCTA Board of Directors (Board) endorsed a comprehensive action plan known as OC Bus 360° plan in 2015. This effort included a comprehensive review of current and former rider perceptions, a peer review panel that reviewed OCTA's performance and plans, new branding and marketing tactics tied to rider needs, upgraded bus routes and services to better match demand and capacity, technology solutions to improve passenger experience, and pricing, as well as other revenue changes to stimulate ridership and provide new funding.

Extensive work was invested by OCTA divisions to implement the OC Bus 360° plan. These efforts included:

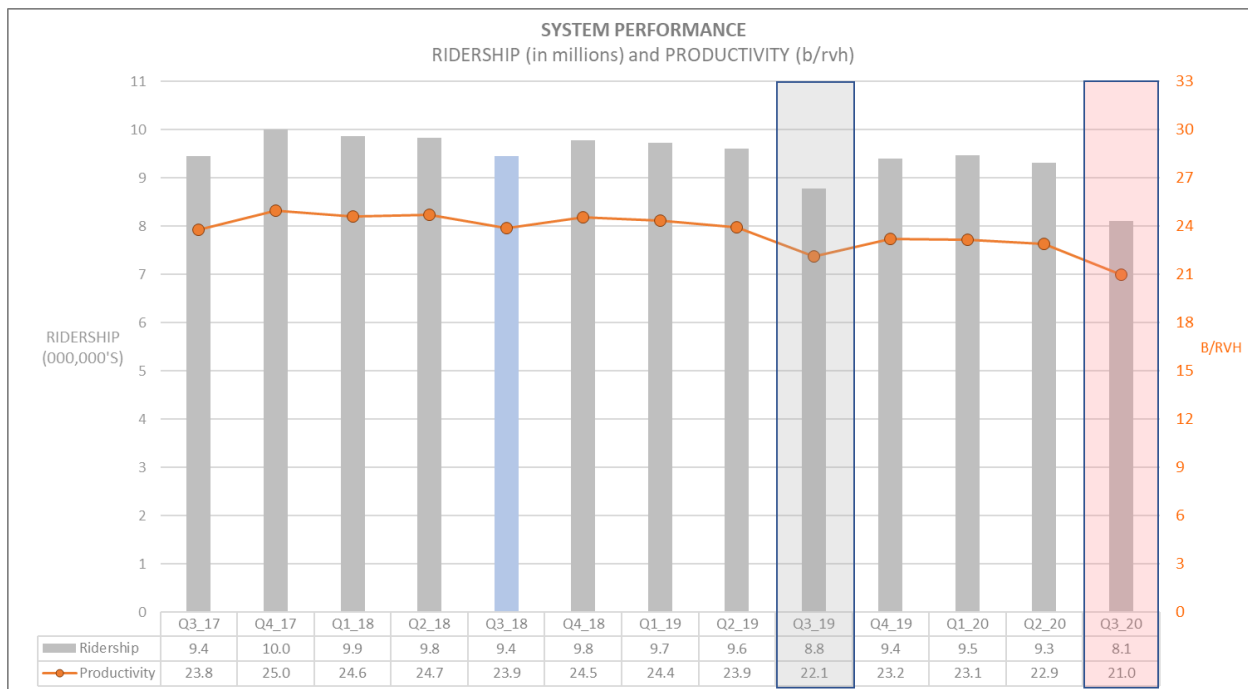
- Implementation of new and faster bus routes;
- Redeployment of services in June 2016, October 2016, October 2017, and February 2018, to improve efficiencies and build ridership;
- Competitively awarded grants to local agencies through Project V for transit services tailored to community needs;
- Implementation of a promotional fare and college pass program;
- Rollout of new technologies, such as mobile ticketing, real-time bus arrival information, a microtransit service; and
- Extensive marketing, public outreach, and promotional campaigns.

### Impact of the Service Changes

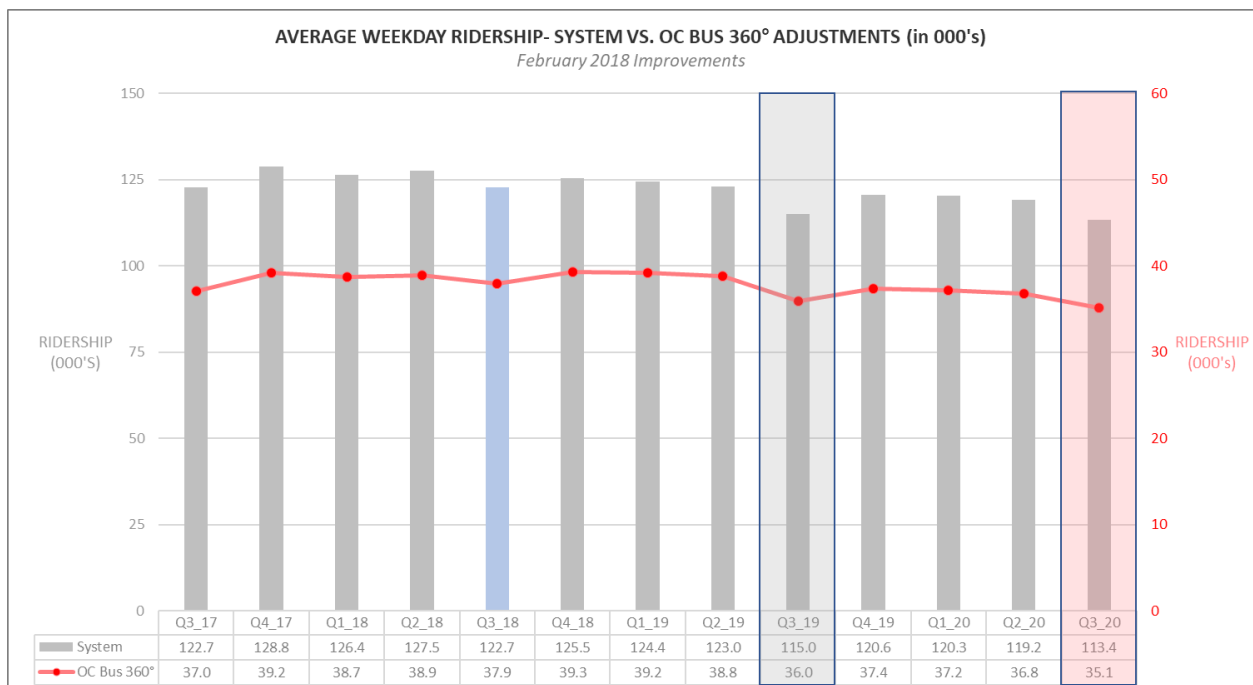
Of the series of approved bus service changes under the OC Bus 360° plan, the changes implemented in October 2016 and February 2018 were the most significant and are tracked for overall OC Bus 360° plan impact. Provided below is a series of charts that show overall system performance over the last 13 quarters and the impact of the route adjustments implemented to date under the plan. In this review, performance is measured by change in average weekday boardings for routes that were improved and average B/RVH for routes that were reduced. This analysis is necessary and ongoing to gauge the effectiveness of the recommended changes and the overall OC Bus 360° plan. The trend of overall system ridership and productivity is provided on the following chart. Though the trend was favorable through January and February, the impact of the COVID-19 pandemic had a substantial impact on ridership and productivity.

Through the third quarter of FY 2019-20:

- Ridership was 13.0 percent lower than the previous quarter, and 7.6 percent lower than the same quarter last year.
- Productivity through the third quarter fell by 8.3 percent from last quarter and dropped by 4.5 percent from the same quarter last year.



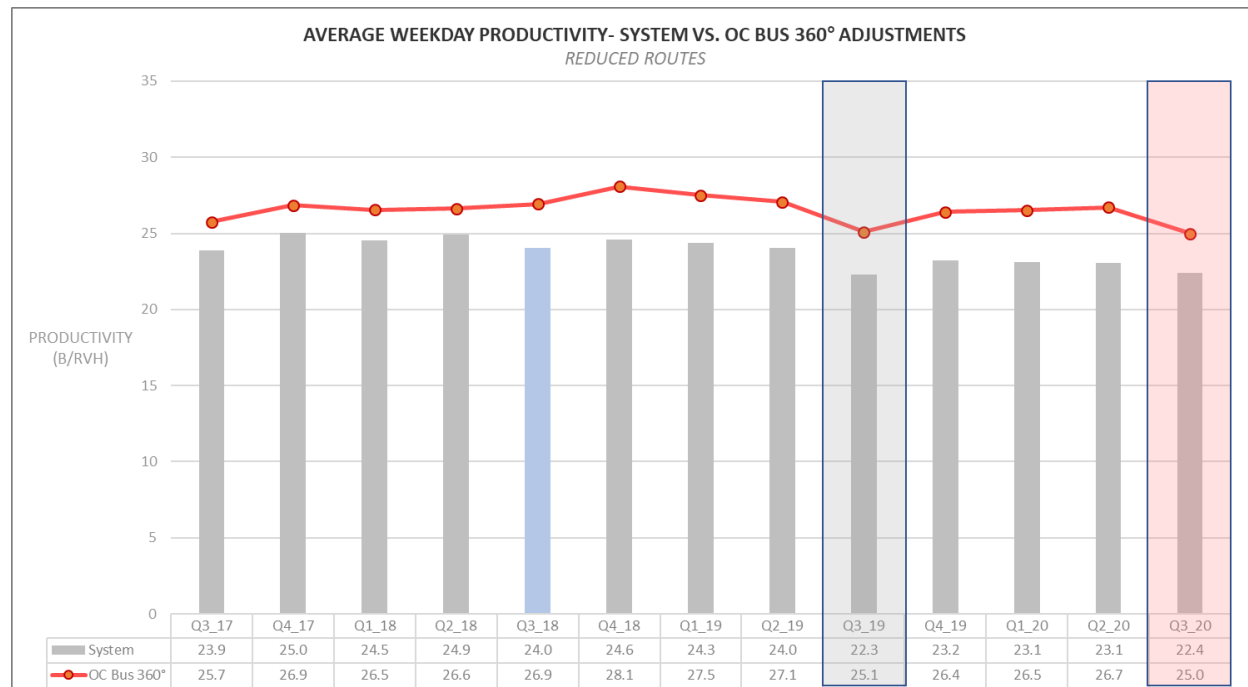
The impacts of the adjustments implemented under the OC Bus 360° plan are consistent with the systemwide trend, including the decrease with respect to the COVID-19 pandemic. The following chart compares the system trend against the group of routes improved under the OC Bus 360° plan. The average weekday ridership systemwide and for the improved routes dropped by 4.8 percent and 4.5 percent compared to last quarter and dropped by 1.4 percent and 2.4 percent respectively compared to the same quarter last year.





Improved system and route productivity are the goals for services that are *reduced* or *eliminate* under the OC Bus 360° plan – making low performing routes more productive.

The following chart compares the system productivity trend against the productivity of the group of routes that were reduced/eliminated, most recently, in February 2018.



During the third quarter of FY 2019-20, productivity systemwide and for the collective reductions decreased by 2.7 percent and 6.5 percent, respectively compared to last quarter. Compared to the same quarter last year, systemwide productivity was up by 0.6 percent and the collective reductions were down by 0.5 percent. Overall, the productivity for the routes reduced under OC Bus 360° remain above the system average by 11.3 percent.

#### Other OC Bus 360° Initiatives

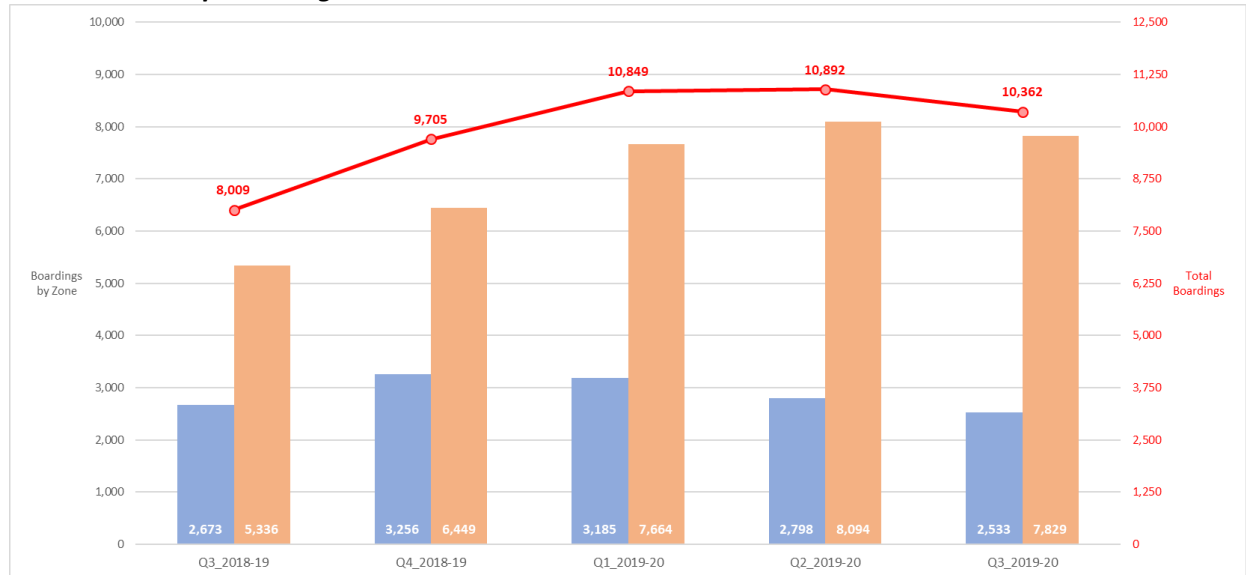
##### **OC Flex Pilot Program**

OC Flex service launched in October 2018 in two zones under a one-year pilot program. The OCTA Board approved five primary goals and performance metrics to evaluate the pilot program. Upon approval of the pilot program, the Board directed staff to provide updates on the performance metrics as part of quarterly Bus Operations Performance Measurements Report.

For the third quarter of FY 2019-20, ridership experienced a decrease due to the impacts associated with the COVID-19 pandemic in mid-March. The two performance metrics related to shared trips and connected trips continue to exceed the respective targets. The measures related to productivity and subsidy per boarding continue to trend in the right direction, though they remain below target. The performance improvement expected from the adjustments implemented in February 2020 did not occur due to the reduced travel demand associated with the “Safer at Home” orders passed down

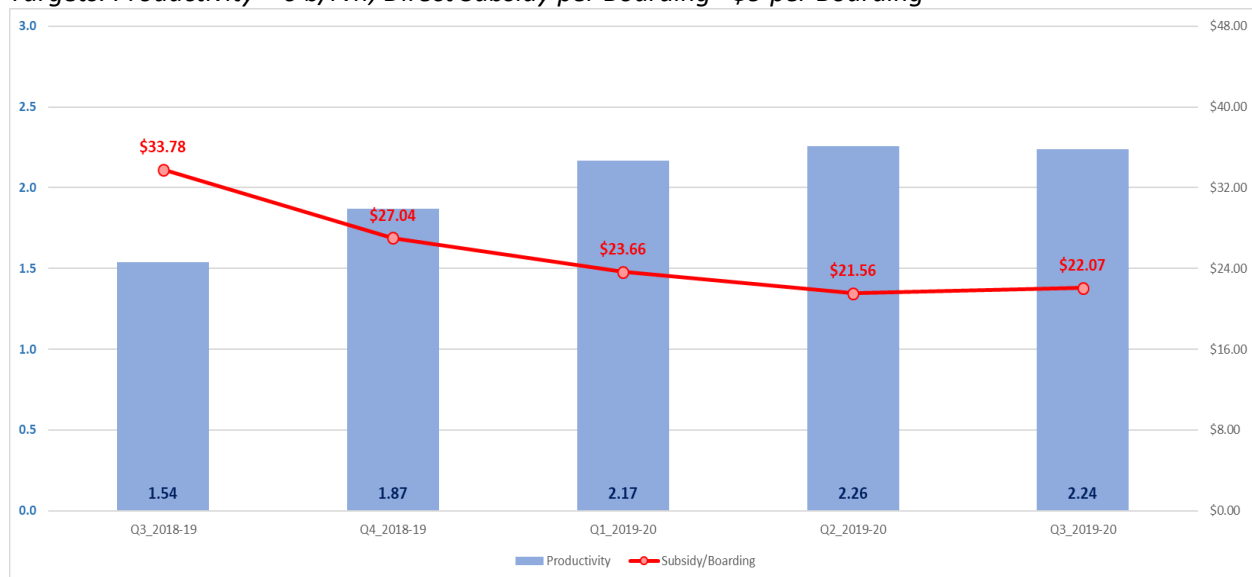
nationally and statewide. Additionally, service in the Blue zone was suspended on March 23, 2020 due to extremely low demand. Staff is now considering options for the near and long-term options for the OC Flex service post-COVID-19 pandemic.

### OC Flex Ridership – Through Q3-FY2019-20



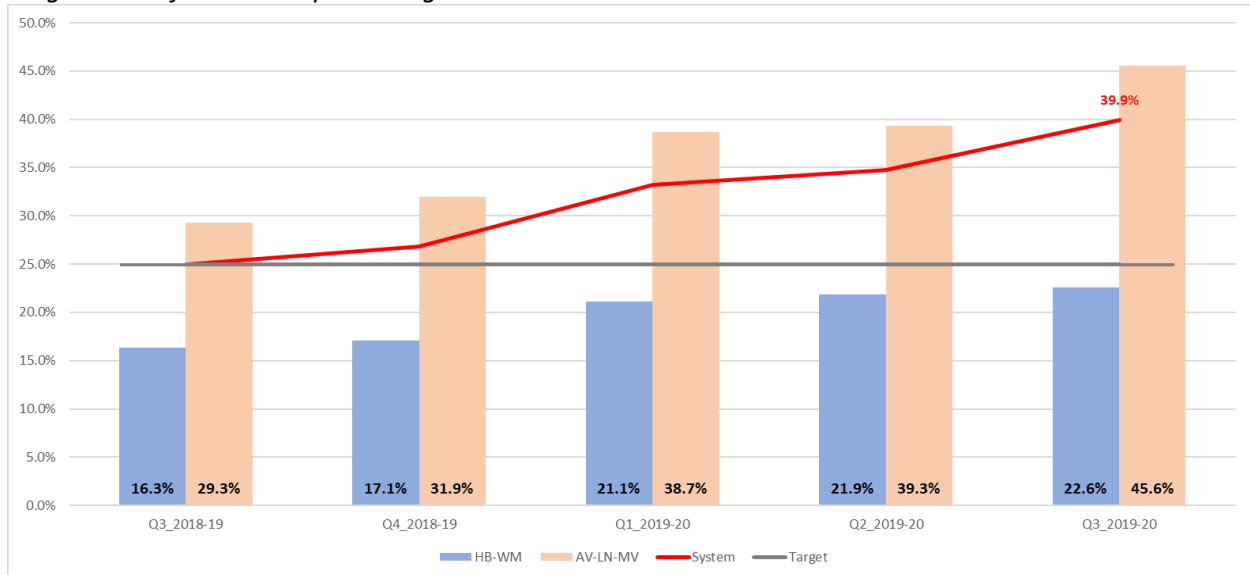
### OC Flex Productivity (B/RVH) and Direct Subsidy per Boarding – Through Q3-FY2019-20

Targets: Productivity – 6 b/rvh; Direct Subsidy per Boarding - \$9 per Boarding



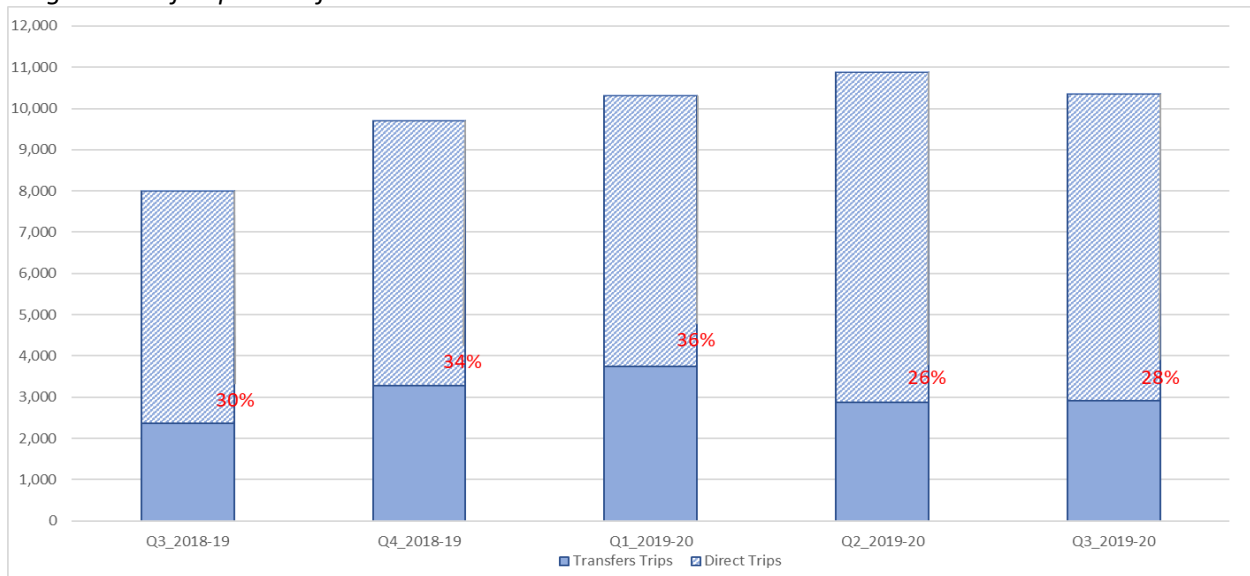
### OC Flex Shared Trips – Through Q3-FY2019-20

Target: 25% of Booked Trips Sharing a Vehicle



### OC Flex Connecting Trips (Transfers) – Through Q3-FY2019-20

Target: 25% of Trips Transfer to OC Bus or Metrolink Service



## **College Pass Program**

The College Pass Program started in August 2017 with students from Santa Ana College and continuing education students from Santa Ana College and Santiago Canyon College. In August 2018, the program expanded to include all students from Santiago Canyon College. In Fall 2019, both Golden West and Fullerton colleges joined the College Pass Program.

Driven by significant ridership decreases in March 2020 due to the COVID-19 pandemic, the third quarter of FY 2019-20 saw an overall 22.9 percent decrease in ridership compared to the same period the prior year in continuing colleges. In the month of March alone, continuing colleges saw decreases of between 44 to 64 percent of ridership from the prior year. Fullerton and Golden West colleges, which joined the College Pass Program this year, saw ridership in March 2020 decrease from the prior month by 42 and 66 percent respectively.

Despite the impact of the third quarter, since starting on August 26, 2019 to the end of the March 2020 reporting period, Fullerton College reported 161,895 boardings and Golden West College reported 97,012 boardings.

The College Pass continued to attract new student riders at Golden West and Fullerton colleges, with the cumulative total of unique student riders to date continuing to increase. The number of unique student riders at Fullerton College increased by 125 percent (from 1,192 in August 2019 to 2,682 by the end of March 2020) and number of unique student riders at Golden West College increasing by 220 percent (from 422 in August 2019 to 1,352 by the end of March 2020).

As of March 31, 2020, less than three years since starting in August 2017, the overall College Pass Program has reported 3.22 million boardings with 18,958 unique students among participating colleges.

The college pass program has been very successful and popular among students and colleges. Even with the possibility of remote instruction in the Fall 2020 term, additional colleges request to join the program. OCTA continues to work with other interested colleges to expand the College Pass program with college-provided funding or student fees and available Low Carbon Transit Operations Program and Mobile Source Air Pollution Reduction grant funds.

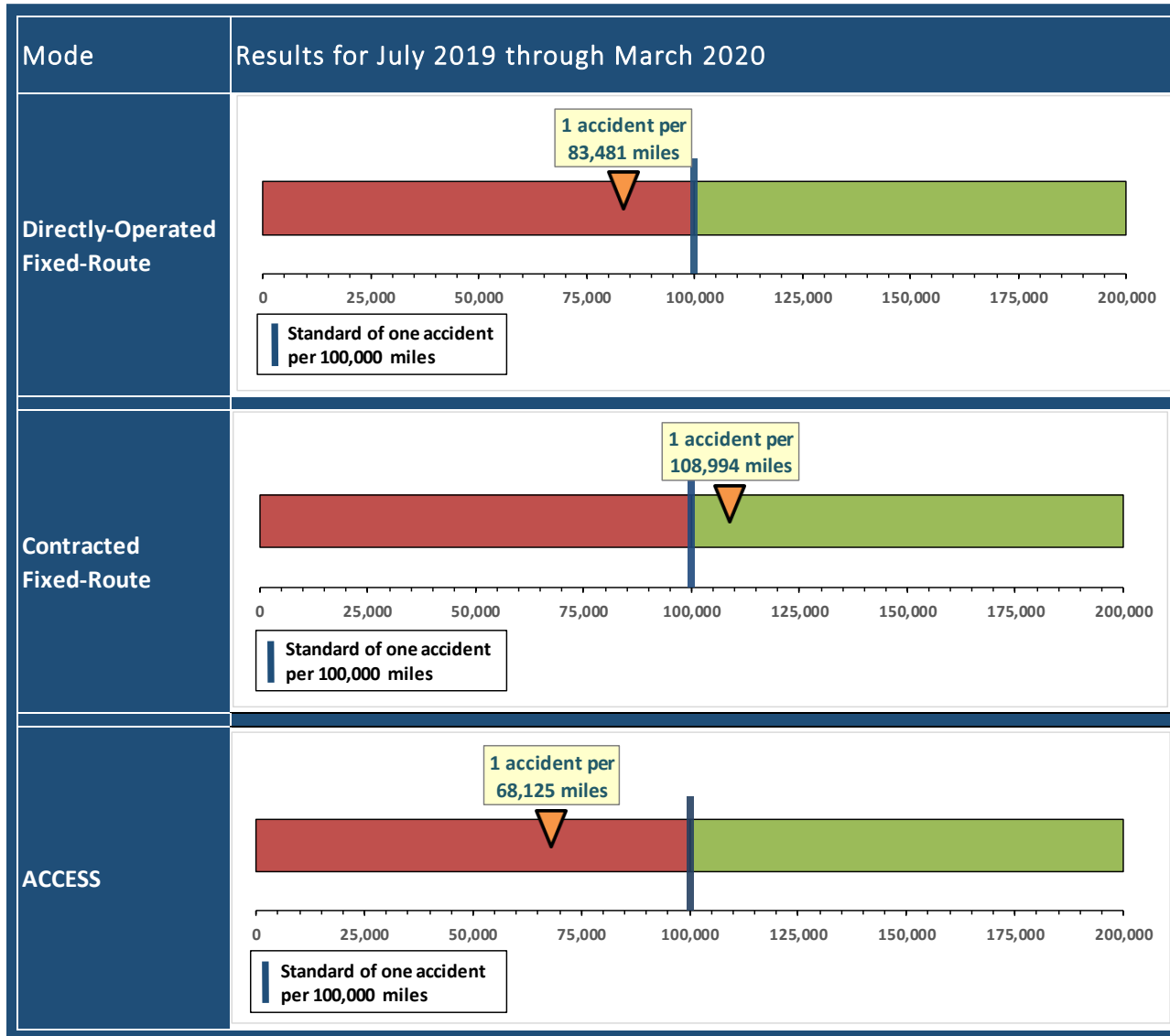
# **BUS OPERATIONS PERFORMANCE MEASUREMENTS REPORT**

**Third Quarter  
Fiscal Year 2019-20**

# Performance Measurements

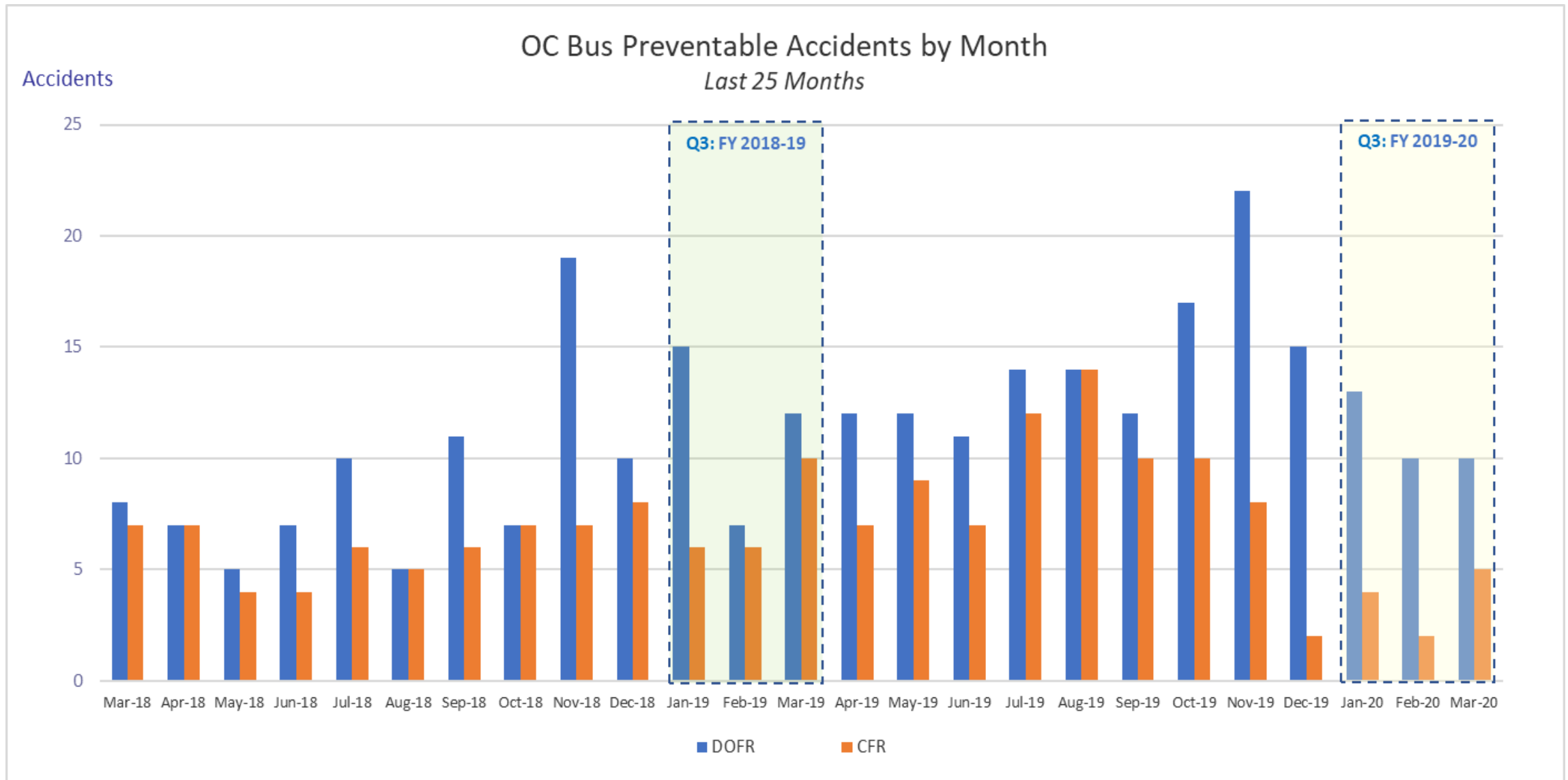
- Safety – Preventable Vehicle Accidents
- Courtesy – Customer Complaints
- Reliability – On-Time Performance (OTP) and Miles Between Road Calls (MBRC)
- Ridership and Productivity
- Farebox Recovery Ratio (FRR)
- Operating Cost per Revenue Vehicle Hour (RVH)
- Performance by Route

# Safety



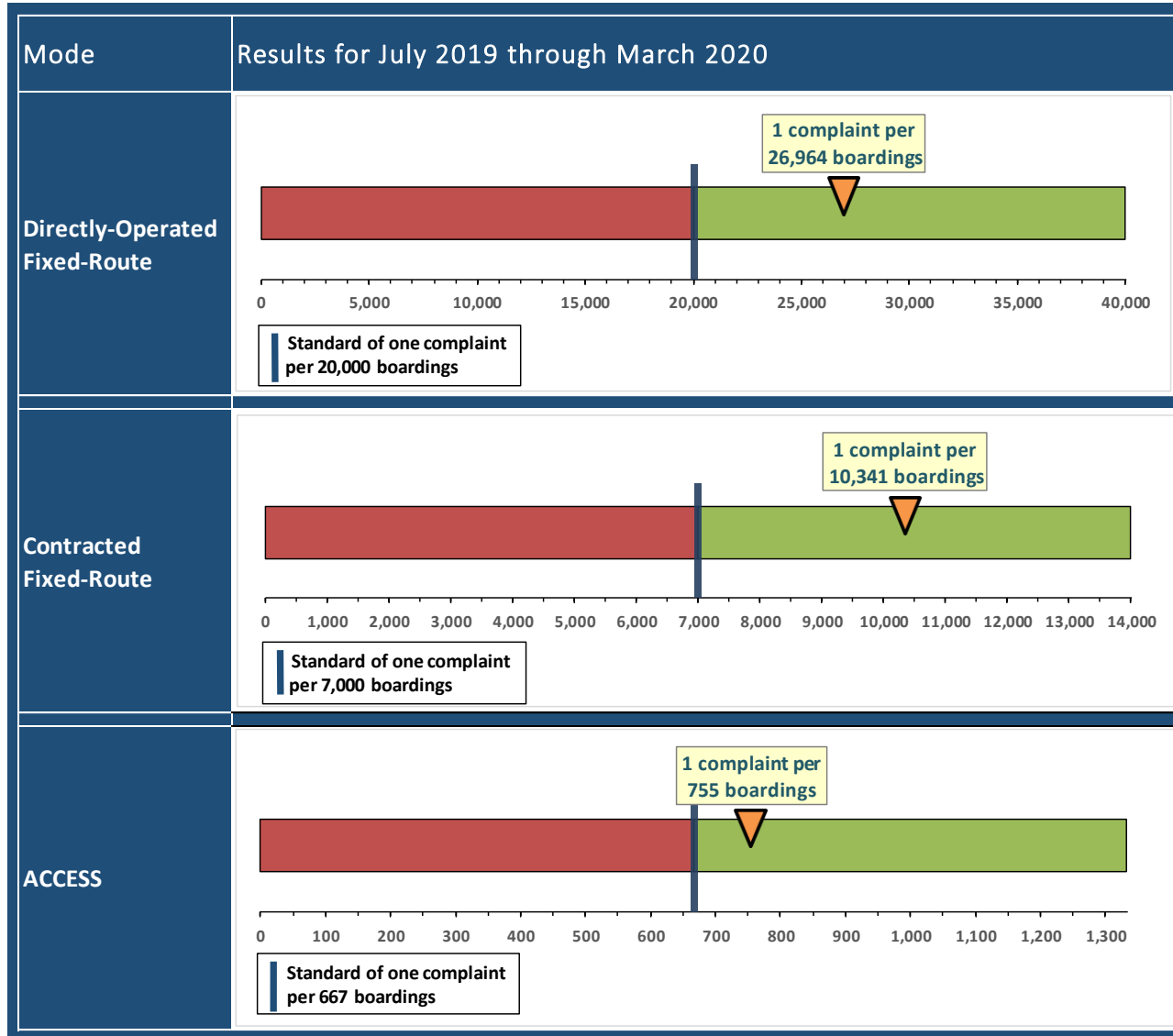
- Directly-operated fixed-route (DOFR) and OC ACCESS were both below the safety standard.
- DOFR
  - Improvement between January and March
  - 39 percent decrease in preventable accidents compared to last quarter
  - Operations staff continues to conduct safety-related campaigns and promote the safe driving award program
- OC ACCESS
  - Decrease in preventable accidents compared to the second quarter
  - Fixed object/curb strikes continue to drive overall performance below standard
  - Regional Director of Safety onsite

# Preventable Accidents – Last 25 Months



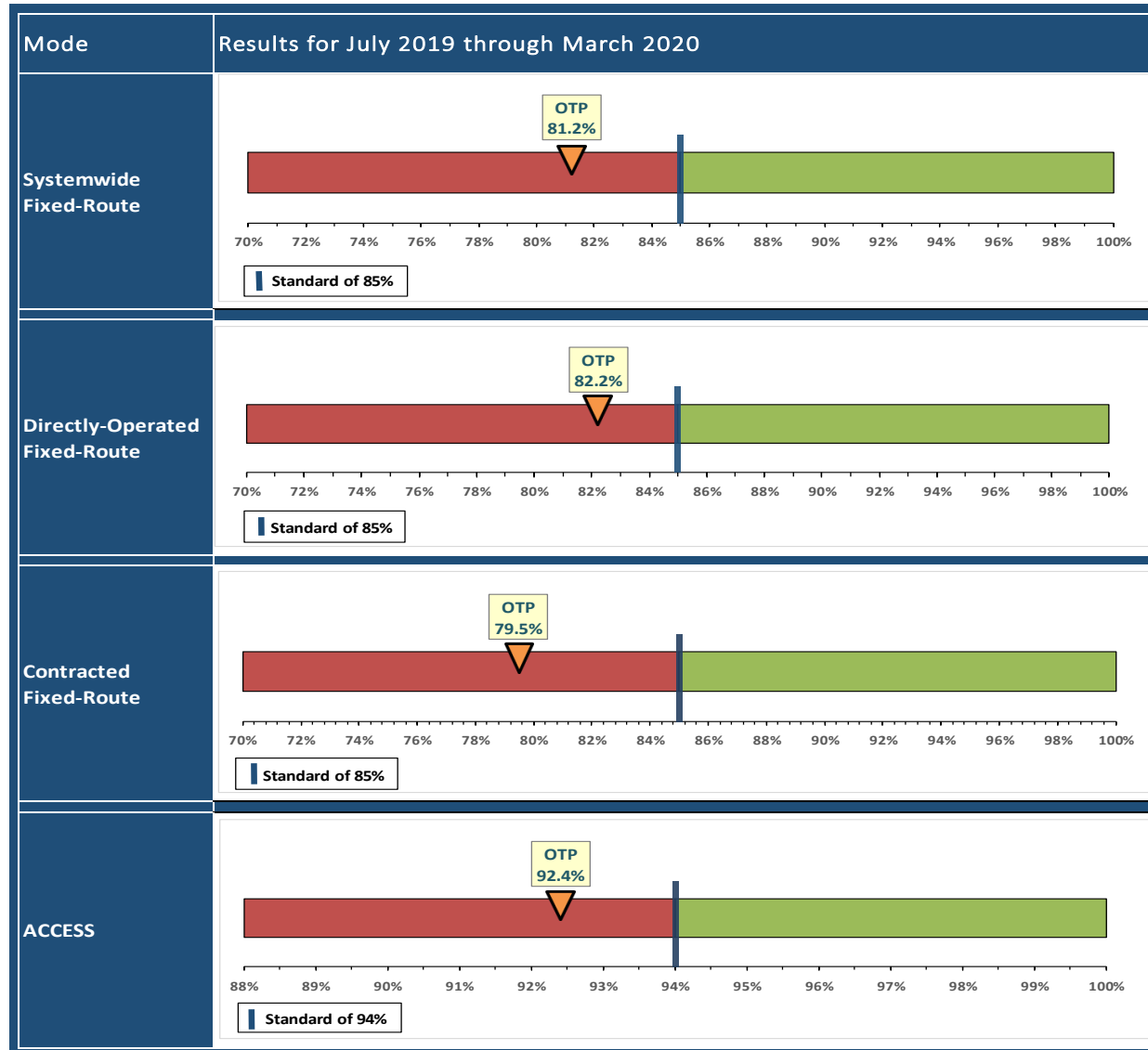


# Courtesy



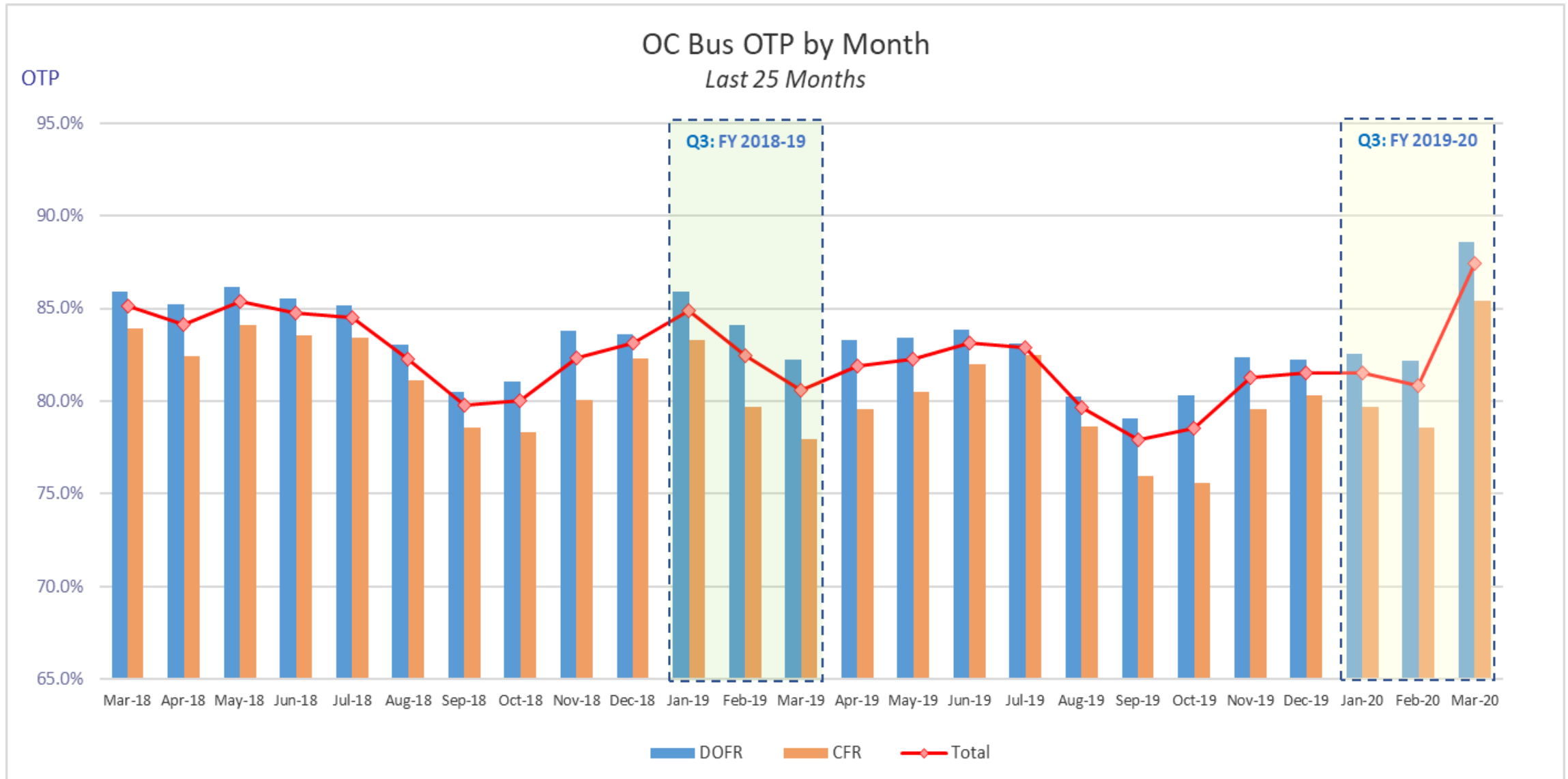
- All three modes of service exceeded the courtesy standard

# Reliability-OTP

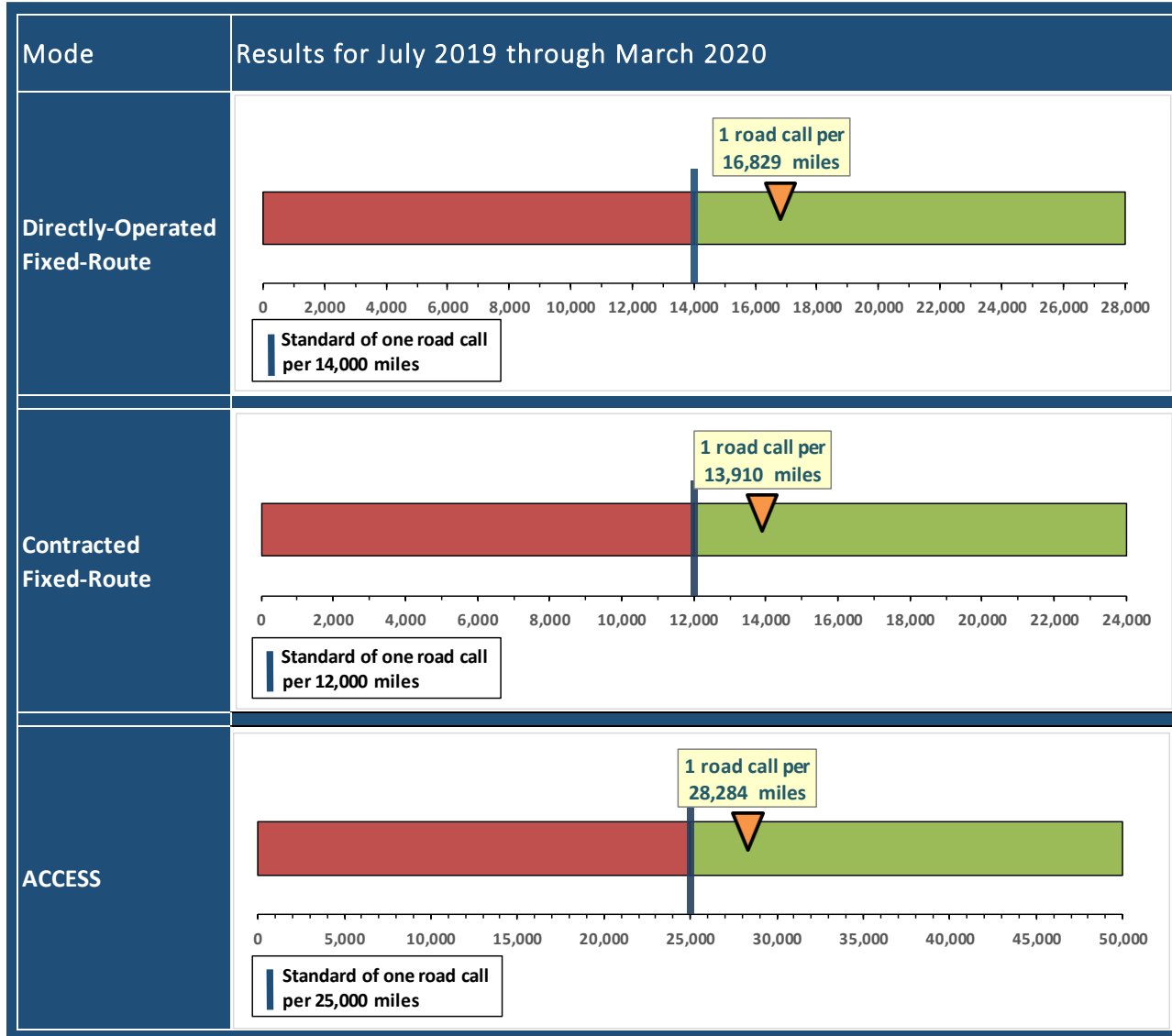


- Systemwide fixed-route service was 3.8 percent below the standard
- DOFR service was 2.8 percent below the standard
  - A one percent improvement over last quarter
  - 88.6 percent in March
- Contracted fixed-route (CFR) service was within 5.5 percent below the standard
  - A 0.7 percent increase over last quarter
  - 85.4 percent in March
- OC ACCESS service was 1.6 percent below the standard
  - Slight improvement over last quarter; contractor continues making modifications to subscription trip routing/scheduling for individuals traveling to adult day programs

# OTP – Last 25 Months

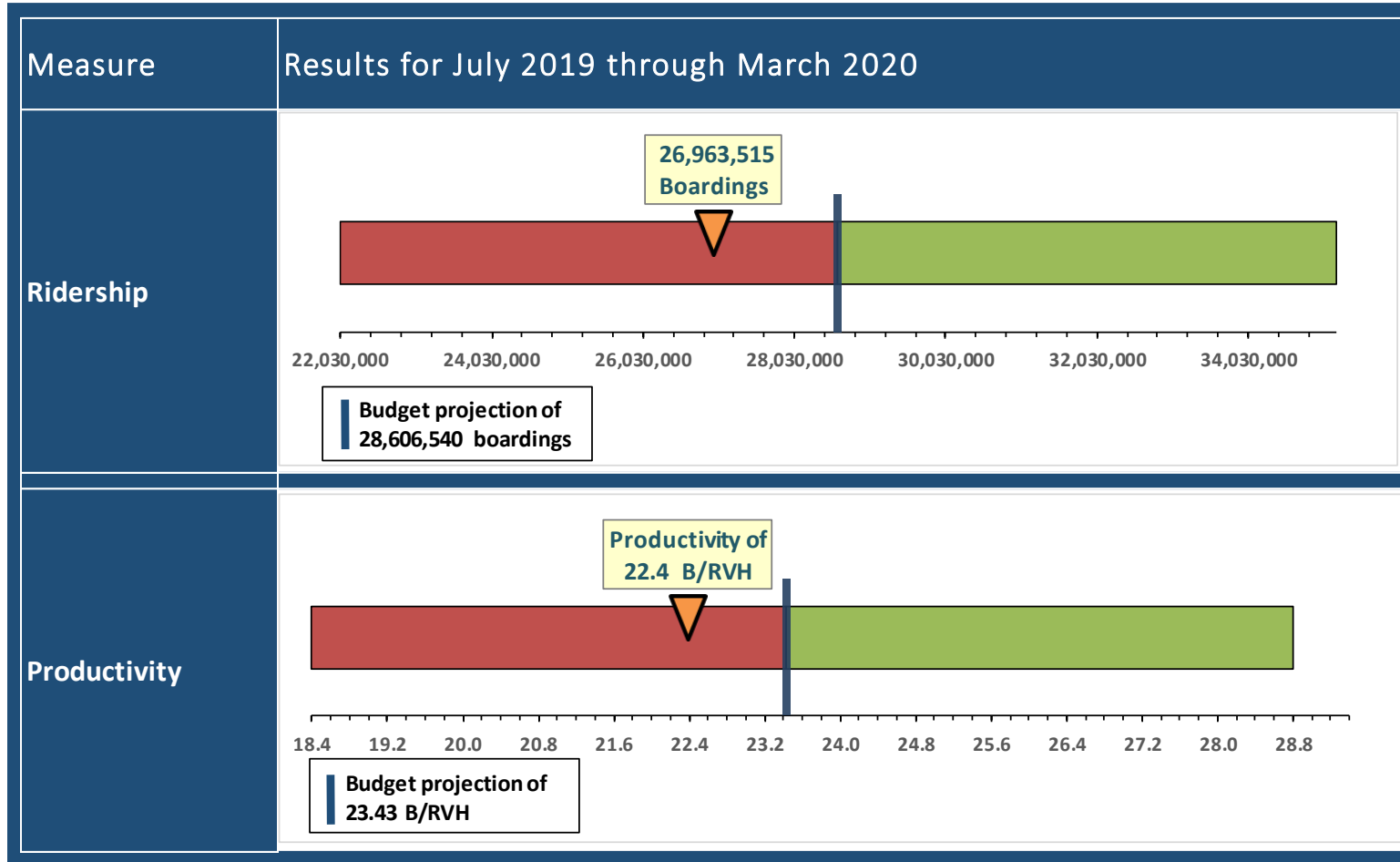


# Reliability-MBRC



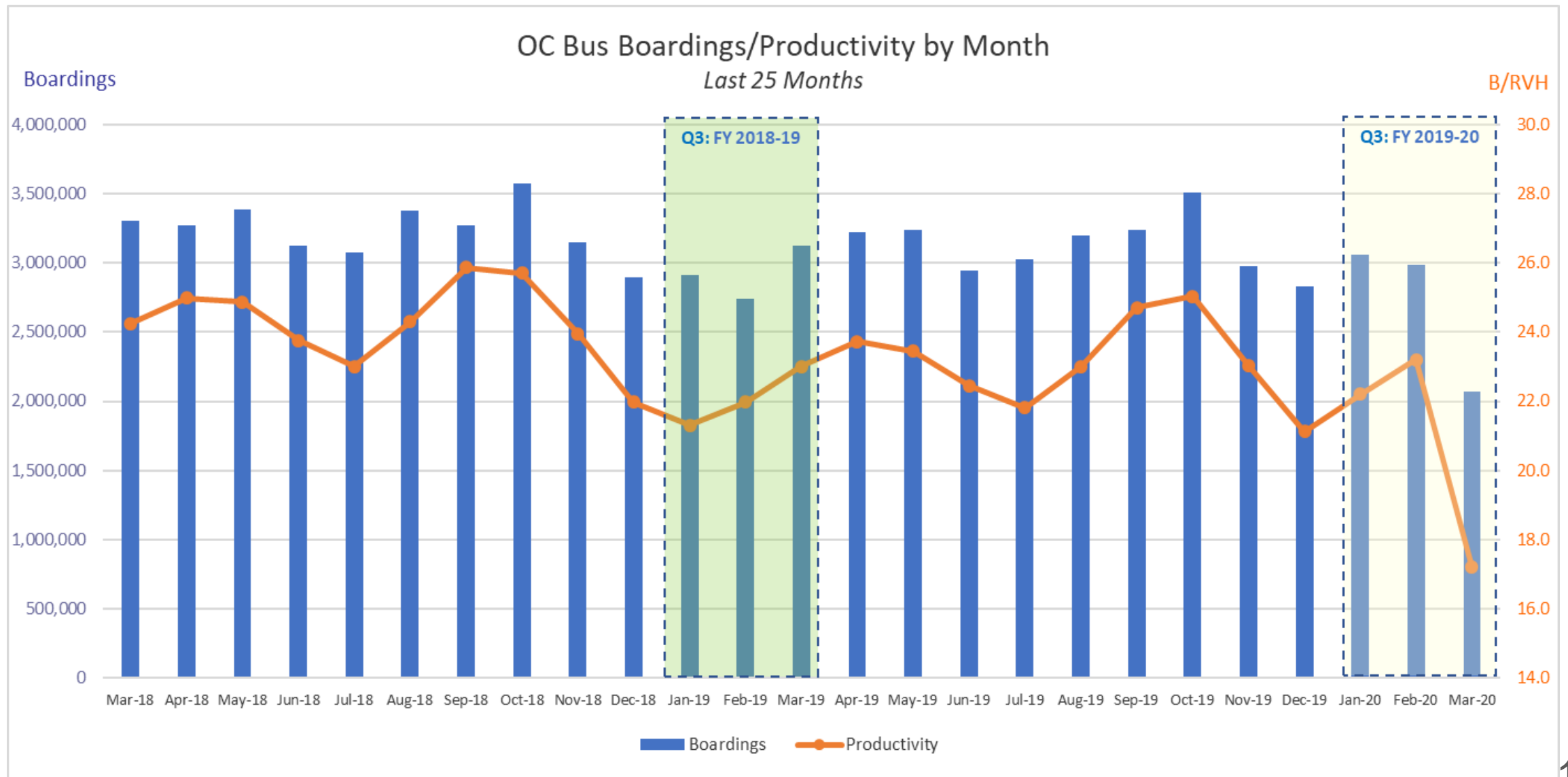
- All modes of service exceeded the MBRC standard
- Trends:
  - DOFR – steady; timely bus replacements and mid-life engine repowers
  - CFR – improved maintenance environment
  - OC ACCESS – Key technician positions filled address maintenance needs

# Fixed-Route-Ridership and Productivity

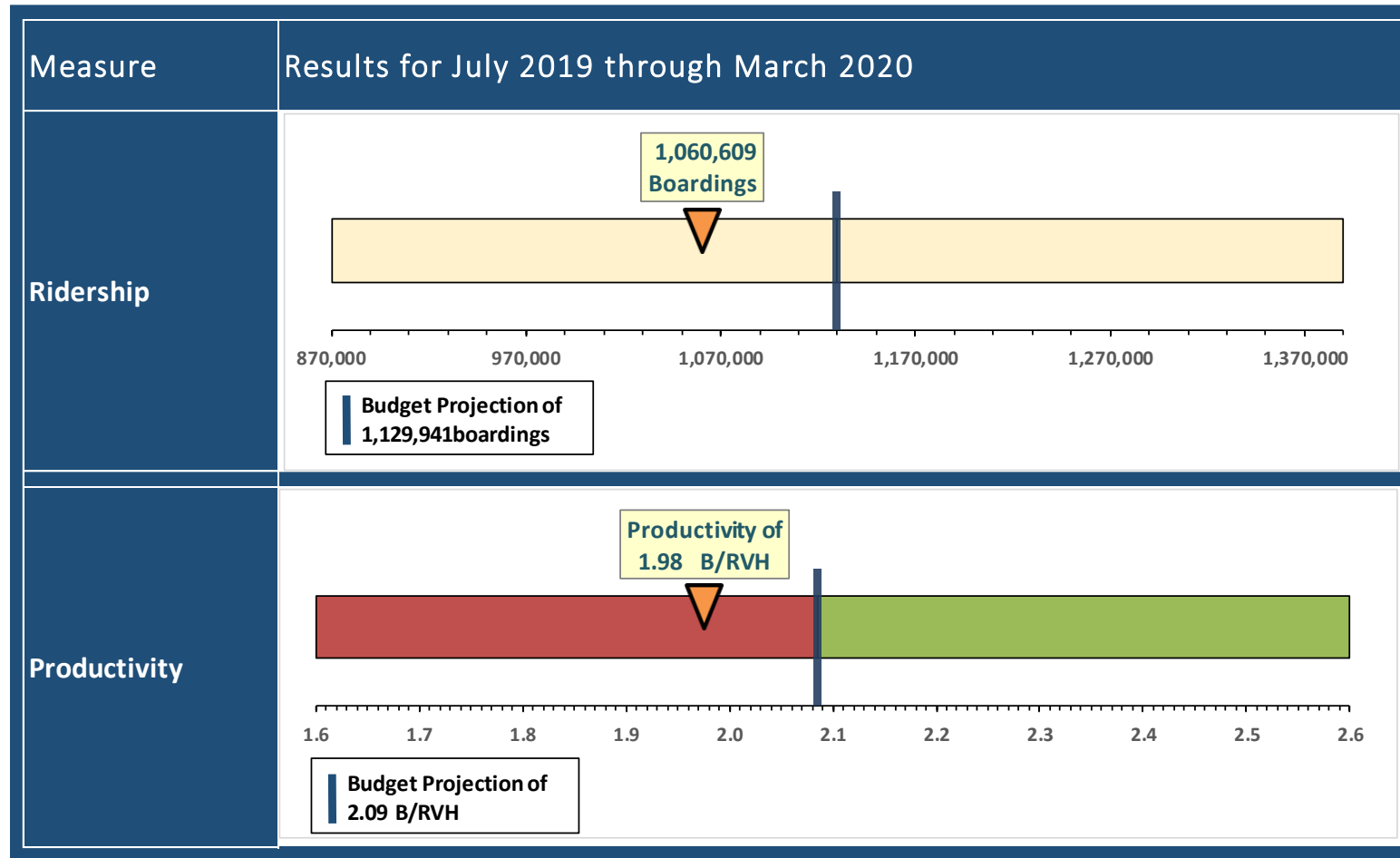


- Fixed-route service was below the budget projection for ridership and productivity
  - Ridership and productivity for down significantly lower from budgeted projections
  - 5.7 percent and 4.5 percent, respectively.

# Fixed-Route-Ridership and Productivity

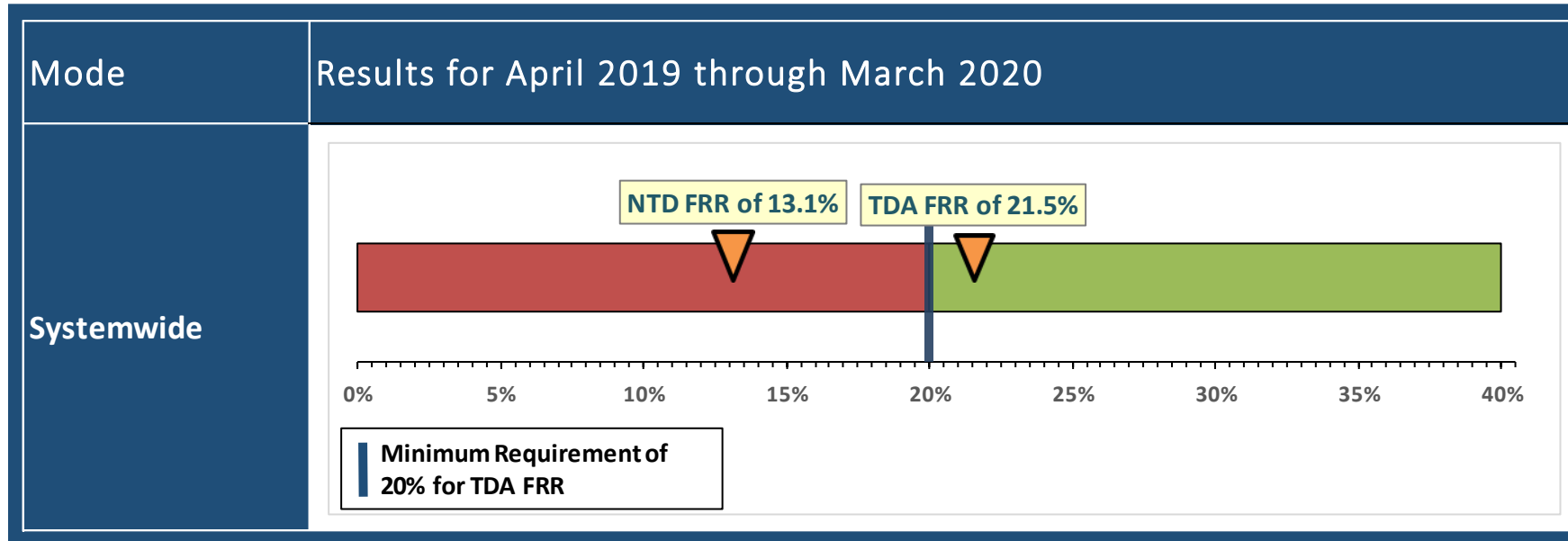


# OC ACCESS-Ridership and Productivity



- OC ACCESS service was below the budget projection for ridership.
- Productivity is 5.3 percent below the budgeted projections.

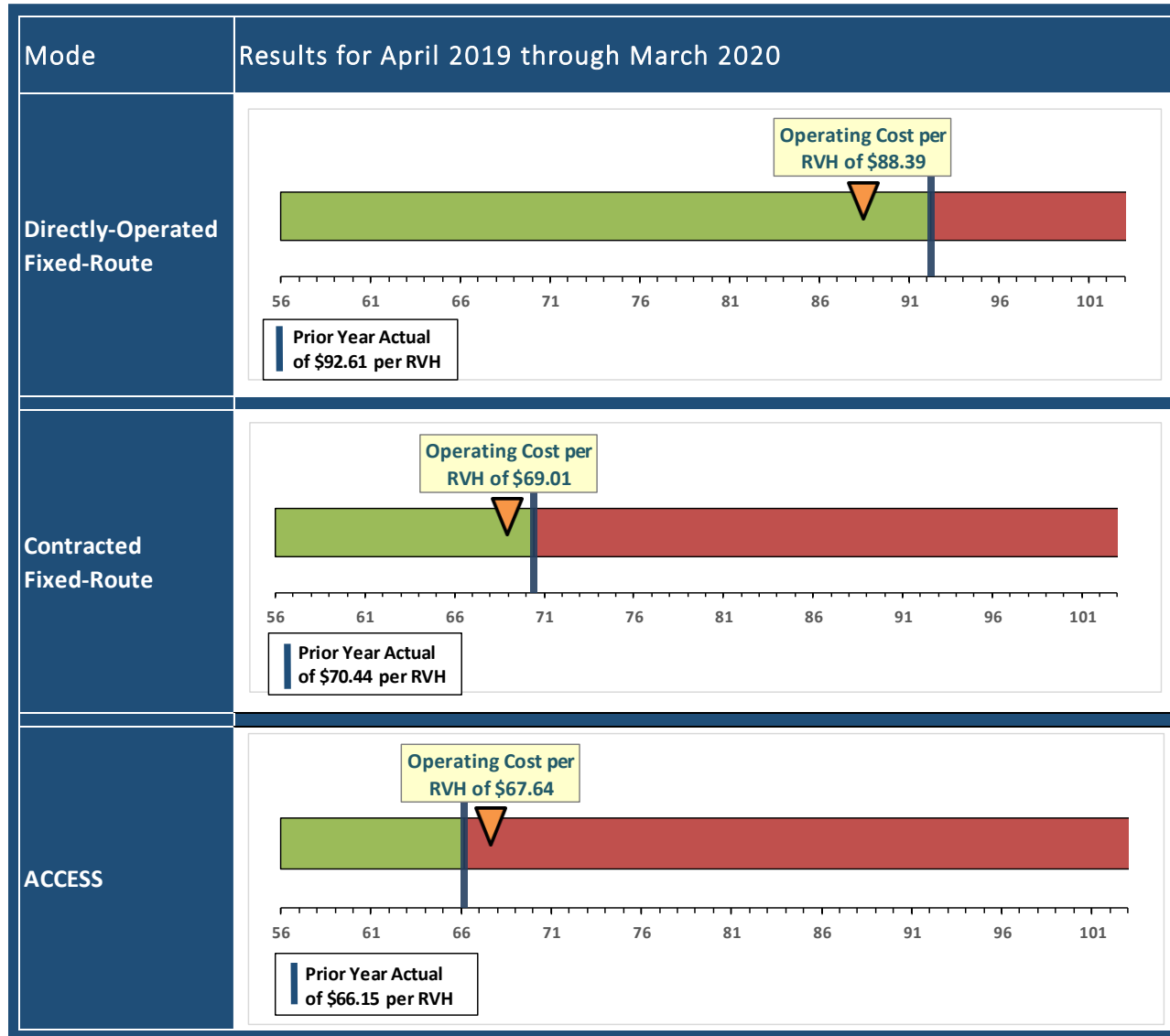
# Farebox Recovery Ratio



- National Transit Database FRR was 6.9 percent under the standard, and
- Transportation Development Act FRR exceeded the standard by 1.5 percent



# Cost per RVH



- DOFR operating cost decreased 4.1 percent from the prior year actuals
- CFR operating cost decreased 2 percent from the prior year actuals
- OC ACCESS operating cost increased 2.3 percent from the prior year actuals

# Performance: Local Routes

Route	Farebox	Subsidy per Boarding	Boardings	BoardVSH	VSH	40 FT	32 FT	60 FT
085	8.0%	\$ 12.70	50,810	8.36	6,079	2	-	-
001	7.1%	12.01	385,710	11.68	33,018	10	-	-
529	7.3%	11.66	243,859	12.76	19,110	10	-	-
087	8.5%	10.98	51,196	9.82	5,215	2	-	-
076	8.4%	10.82	60,494	12.08	5,008	2	-	-
083	10.2%	8.52	414,666	16.20	25,603	9	-	-
086	11.1%	8.27	101,451	12.32	8,234	3	-	-
091	12.8%	8.07	280,858	12.72	22,087	8	-	-
090	13.6%	7.46	229,348	14.21	16,139	8	-	-
079	13.2%	6.73	317,759	14.74	21,558	6	-	-
056	12.2%	6.58	296,926	19.35	15,346	5	-	-
560	12.7%	6.54	533,808	20.79	25,681	13	-	-
059	14.0%	6.15	404,540	16.25	24,900	7	-	-
089	15.2%	6.03	245,835	16.15	15,219	5	-	-
082	17.0%	6.00	57,638	18.47	3,120	2	-	-
026	13.8%	5.95	320,070	16.75	19,109	6	-	-
025	14.2%	5.89	266,672	16.43	16,229	3	-	-
055	15.4%	5.88	921,140	21.00	43,866	13	-	-
050	13.0%	5.83	904,877	21.88	41,353	5	-	6
071	14.8%	5.76	517,972	17.17	30,175	9	-	-
037	14.3%	5.75	777,464	23.19	33,519	15	-	-

Route	Farebox	Subsidy per Boarding	Boardings	BoardVSH	VSH	40 FT	32 FT	60 FT
072	14.5%	\$ 5.72	364,373	21.25	17,149	4	1	-
054	14.5%	\$ 5.70	869,506	22.39	38,833	16	-	-
029	15.1%	\$ 5.34	1,243,921	23.55	52,831	5	-	7
543	16.2%	\$ 4.92	641,470	25.70	24,961	10	-	-
035	15.9%	\$ 4.81	569,160	20.76	27,411	10	-	-
033	15.5%	\$ 4.80	269,878	20.43	13,208	5	-	-
070	17.3%	\$ 4.77	652,545	20.56	31,732	10	-	-
047	17.9%	\$ 4.76	1,489,528	25.49	58,435	19	-	-
030	15.9%	\$ 4.69	494,816	20.39	24,271	7	-	-
057	17.3%	\$ 4.69	1,410,344	29.38	48,009	4	-	11
046	18.3%	\$ 4.42	452,008	21.73	20,797	8	-	-
038	17.6%	\$ 4.35	732,153	22.65	32,318	14	-	-
060	17.8%	\$ 4.21	1,360,015	28.65	47,464	12	-	-
053	18.6%	\$ 4.16	973,836	29.65	32,844	10	-	-
053X	19.9%	\$ 3.90	483,523	27.69	17,463	5	-	-
043	20.4%	\$ 3.79	1,515,585	29.96	50,581	11	-	-
057X	22.0%	\$ 3.62	775,154	29.98	25,858	3	-	6
042	19.5%	\$ 3.57	1,098,476	26.31	41,750	13	-	-
066	22.8%	\$ 3.39	1,467,798	32.68	44,908	12	-	-
064	22.2%	\$ 3.21	1,083,794	36.60	29,611	10	-	-
064X	23.8%	\$ 2.95	435,532	35.14	12,395	4	-	-

VSH - vehicle service hour

BoardVSH - boardings per vehicle service hour

# Performance: Community Routes

Route	Farebox	Subsidy per Boarding	Boardings	BoardVSH	VSH	40 FT	32 FT	60 FT
862	5.3%	\$ 17.08	38,709	7.93	4,883	2	-	-
123	8.7%	13.83	18,076	7.73	2,337	4	-	-
153	7.8%	11.62	80,280	8.91	9,011	2	-	-
178	8.8%	10.70	62,064	9.68	6,413	2	-	-
177	11.2%	9.41	62,375	11.34	5,500	3	-	-
167	12.0%	7.69	144,808	13.66	10,601	5	-	-
129	12.6%	7.36	139,376	13.67	10,198	3	-	-
143	11.5%	7.32	135,843	13.72	9,903	3	-	-
150	15.3%	6.22	126,948	16.86	7,528	4	-	-

# Performance: Express/Stationlink Routes

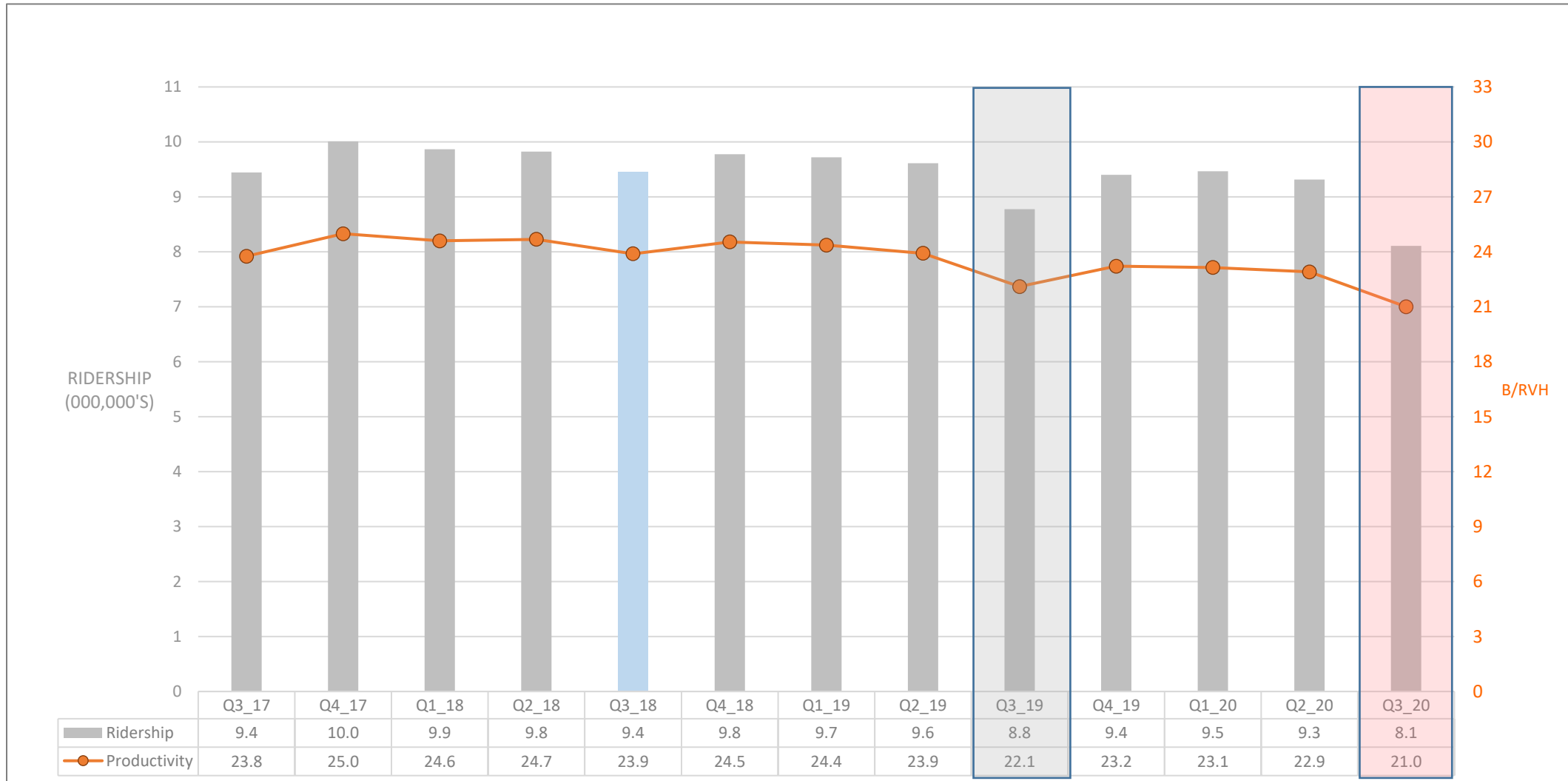
Route	Farebox	Subsidy per Boarding	Boardings	BoardVSH	VSH	40 FT	32 FT	60 FT
213	2.3%	\$ 51.96	7,691	3.79	2,031	5	-	-
721	4.6%	44.17	15,223	5.29	2,880	3	-	-
701	9.7%	27.22	18,464	9.63	1,917	3	-	-
206	6.1%	24.53	8,872	8.77	1,012	4	-	-
794	20.4%	23.40	21,681	7.16	3,027	2	-	-

Route	Farebox	Subsidy per Boarding	Boardings	BoardVSH	VSH	40 FT	32 FT	60 FT
463	3.5%	\$ 28.66	12,592	5.66	2,226	3	-	-
480	8.2%	13.60	16,918	12.55	1,348	3	-	-
472	9.4%	11.56	19,879	13.86	1,434	3	-	-
453	7.7%	10.40	21,205	14.94	1,419	2	-	-
473	14.7%	7.29	31,577	22.97	1,374	3	-	-

# **BUS OPERATIONS PERFORMANCE AND OC BUS 360°**

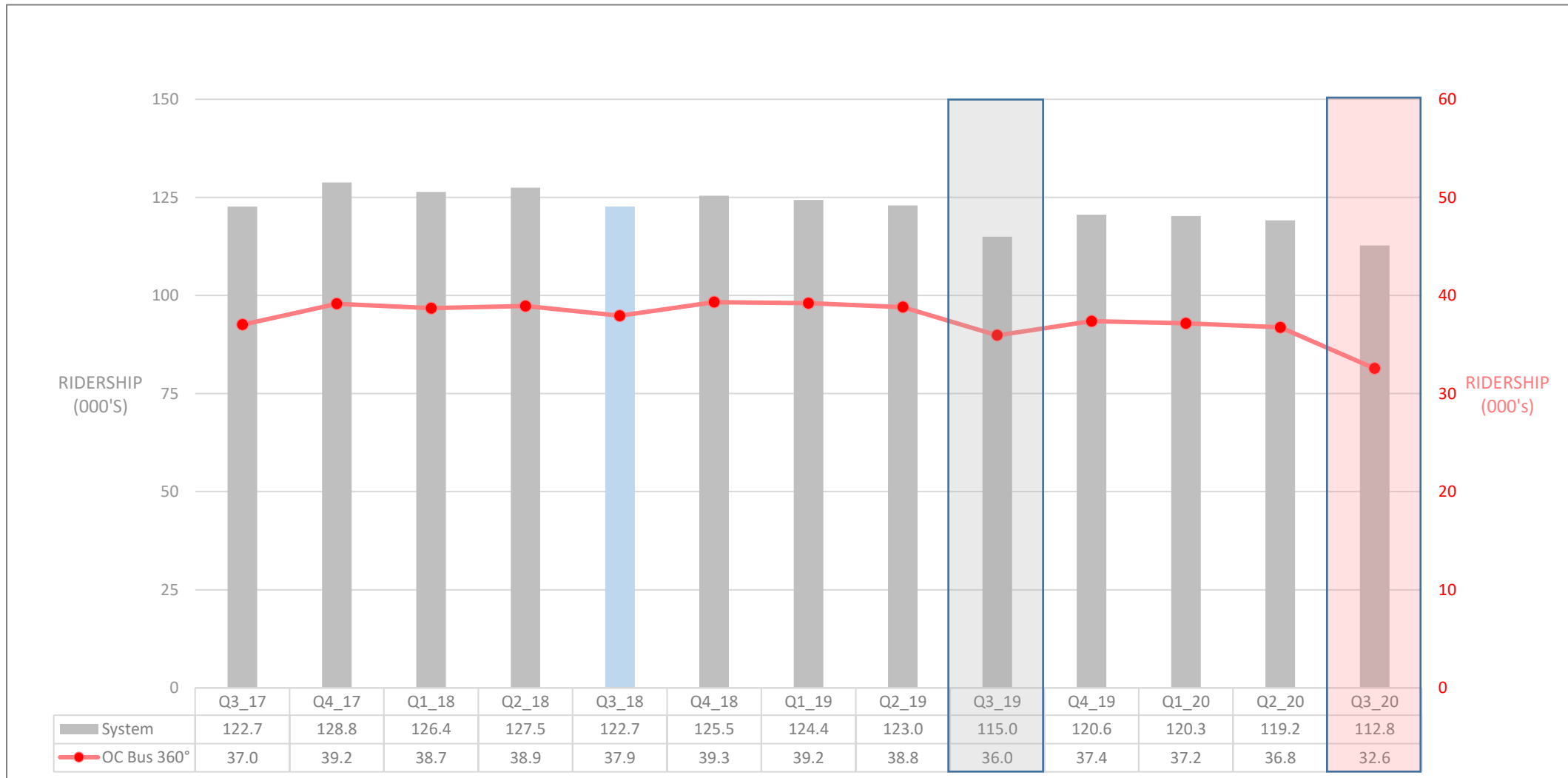
# Performance: System-wide Trends

*RIDERSHIP and PRODUCTIVITY: 13-Quarter Trend*



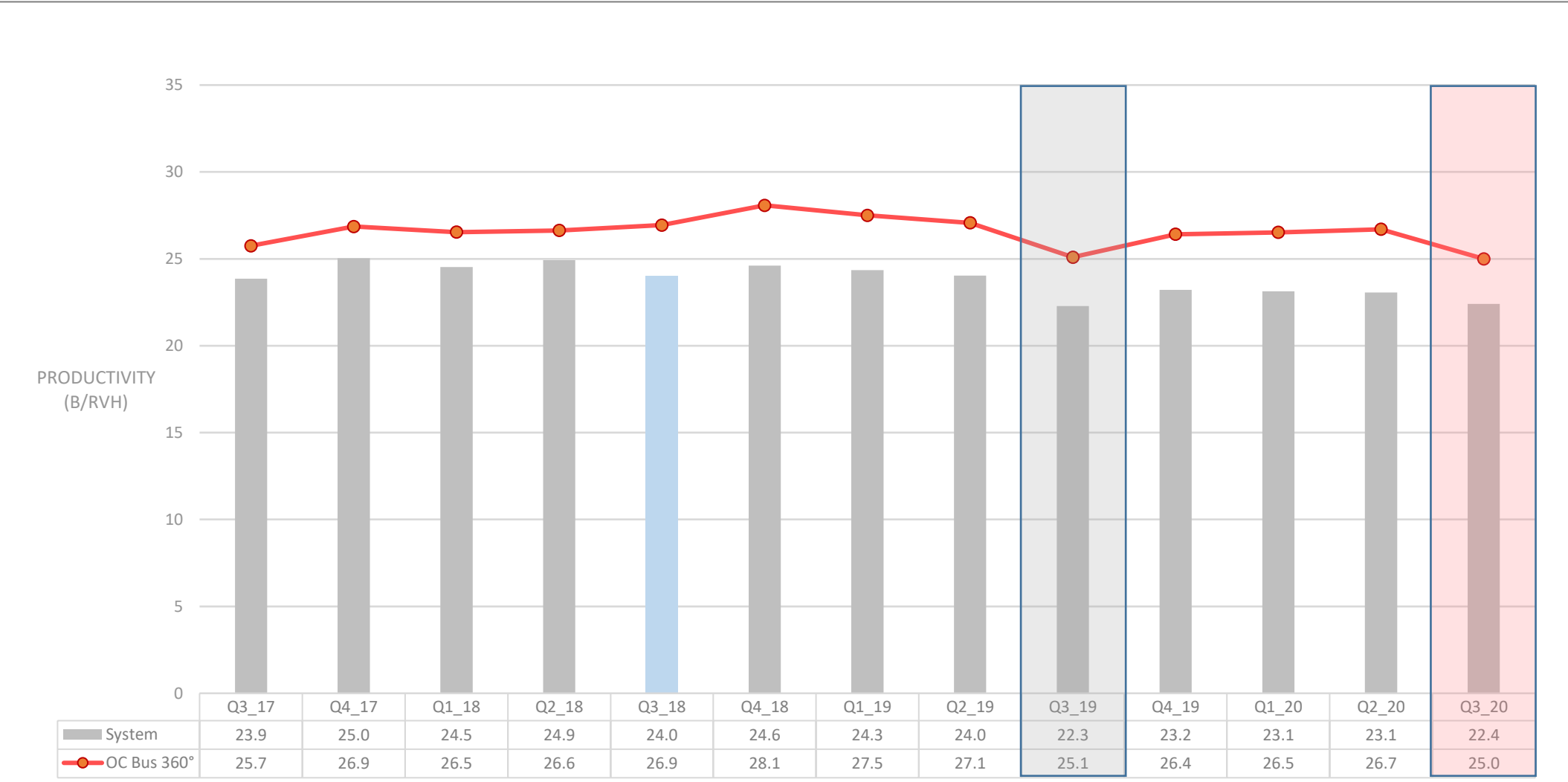
# Performance: OC Bus 360° Improvements

*Average Weekday RIDERSHIP – System vs. OC Bus 360° Route Improvements To Date*



# Performance: OC Bus 360° Reductions

Average Weekday PRODUCTIVITY – System vs. OC Bus 360° Route Reductions/Eliminations To Date





# Future Reports

October 8, 2020, Transit Committee

- Fourth Quarter Bus Operations Performance Measurements Report



**June 11, 2020**

**To:** Transit Committee

**From:** Darrell E. Johnson, Chief Executive Officer

**Subject:** Fullerton Park-and-Ride Joint Development Study

### **Overview**

The Orange County Transportation Authority initiated a joint development study in summer 2018 to identify opportunities for enhancing the vitality of the Fullerton Park-and-Ride facility. This study identified financially feasible development opportunities that complement surrounding land-uses, support transit ridership, and preserve enough parking to support rideshare needs. Study findings and next steps are presented for Board of Directors' information.

### **Recommendation**

Receive and file as an information item.

### **Background**

Transit agencies throughout the nation have successfully completed joint development projects that have created revenues for transit, increased transit ridership, and/or fostered public and private partnerships in communities. In this context, "joint development" refers to an Orange County Transportation Authority (OCTA) transportation asset or project that is integrally related to and/or co-located with commercial, residential, or mixed-use development. Joint development may include partnerships for public, private, and/or non-profit development associated typically with rail or bus transit systems and other OCTA assets that are being improved through new construction, renovation, or extension. The Federal Transit Administration (FTA) also promotes joint development to maximize the utility of FTA-funded projects and encourages transit agencies to generate income.

OCTA policies on joint development date back to 1985, as first developed by the Orange County Transit District. These policies have since been built upon and refined, with the last major update in September 2016. Currently, OCTA's Joint Development Policy and Procedures (Attachment A) encourage the pursuit of joint development projects on OCTA-owned properties along

OCTA transit routes. Potential joint development projects are encouraged to utilize office, commercial, residential, and other uses to promote safety, convenience, accessibility, environmental and air quality, and economic benefits to the public. OCTA periodically conducts market feasibility studies, site assessments, and consultations with local agencies for OCTA-owned properties. Below is a discussion of the most recent study that evaluated joint development opportunities at the Fullerton Park-and-Ride facility, including next steps.

### ***Discussion***

The Fullerton Park-and-Ride facility is located at 3000 West Orangethorpe Avenue in the City of Fullerton (City [see Attachment B]) for more information on the facility's context]. It is an OCTA-owned and operated facility that includes nearly 750 public parking spaces on an 11.1-acre site, along with 14 bus docks including amenities, such as covered bus shelters, waiting areas, restrooms, and benches. The facility is bounded by the interchange of Interstate 5 and State Route 91 to the south and west, Orangethorpe Avenue to the north, and Magnolia Avenue to the east.

This is OCTA's largest park-and-ride facility with connections to eight bus routes and serves as a regional transfer point for OCTA, as well as Los Angeles County Metropolitan Transportation Authority bus operations. However, since 2007, three separate OCTA evaluations (including this joint development study) have consistently identified that parking at this facility is underutilized, with only 55 percent of available parking used on weekdays and 20 percent used on weekends.

In recognition of the situation, the following goals were established for evaluating joint development opportunities at this facility:

- Identify land-uses that would complement transit and park and ride usage,
- Evaluate potential for new revenue to support OCTA operations,
- Support the City and local neighborhoods with complementary concepts, and
- Improve services and conditions for transit riders.

With the goals identified, a site assessment was conducted. This included an analysis of existing conditions, such as parking utilization, transit operations, traffic conditions, travel mode splits, and on-site amenities. This site assessment also identified constraints and opportunities for joint development consideration. The facility's most notable constraint is its location between a freeway interchange and two major arterials. This inhibits the ability to expand the property, if needed, and the potential for noise, sight, and air quality impacts from

these adjacent facilities. However, the property possesses a number of opportunities that make joint development viable, with the most notable being:

- Excess parking – of the nearly 750 parking spaces, roughly 400 are needed to maintain 2019 OCTA operations,
- The large, linear site allows for a variety of development concepts that could be implemented in phases, and
- High-visibility and proximity to major roadways and existing retail and residential developments make commercial and residential uses attractive.

A market study and feasibility analysis were then conducted to complement the site assessment. This identified which types of land-uses are the most viable considering surrounding land-uses and financial conditions. Several land-use types were initially analyzed, including multifamily residential, affordable housing, office, hotel, retail, and light industrial. From this list, only office and hotel uses were found to have low market demand in the area and therefore were not economically viable.

The final step in this process explored seven potential development scenarios or concepts that utilized various land-use mixtures, housing types, site layouts, and densities (Attachment C). These development concepts also compared market-rated, affordable, and supportive housing types, and reflected input received from key stakeholders and the City. Pro forma reports were then developed for each concept to evaluate their respective financial viability. Given the need to maintain roughly 400 parking spaces for 2019 OCTA operations and park-and-ride patrons, these development concepts and the pro forma reports demonstrate a range of physical, financial, and operational possibilities for developing the facility's excess capacity.

### Findings

Development concepts revealed a few key challenges that potential projects would have to overcome. The most prevalent challenge being the cost of structured parking, which many of the concepts required to support development of the property. Although these same concepts were often projected to induce higher transit ridership and generate a high income for both OCTA and a developing partner, the cost of structured parking exceeded projected revenues. This high cost makes it challenging for a developer to generate a competitive return on investment (ROI), and unlikely to garner interest.

However, the phased option concept did perform particularly well due its avoidance of structured parking. The phased option (Attachment D) supports development of a smaller section of the facility, limiting parking needs to the existing surface parking supply while also maintaining the spaces required for OCTA operations and park-and-ride patrons. This concept limits impacts to OCTA bus operations by maintaining the existing bus bay layout and functionality of the park-and-ride facility, while primarily adding residential and retail uses to the east corner of the site by the intersection of Magnolia Avenue and Orangethorpe Avenue. Not only does the phased option provide an attractive ROI for a developer, but also an immediate ROI for OCTA at no cost. Utilizing the phased option, OCTA could improve the site's transit propensity, land value, community appeal, and user experience. Furthermore, any potential development could expand beyond the parameters identified in the phased option by adopting various site-specific policies, transportation demand management strategies, and leveraging public-private partnerships.

These development concepts demonstrate that joint development is feasible at the Fullerton Park-and-Ride facility and could provide value to OCTA, its customers, and the community. However, potential joint development project proposals could greatly differ from the concepts identified by this exercise. To set expectations for potential development partners, OCTA should establish site-specific policies and goals to guide its development. To do so, OCTA staff will continue working with the City to further study site needs and develop draft policies and goals.

### Next Steps

Despite current economic uncertainties related to the novel coronavirus (COVID-19) pandemic, preliminary discussions with OCTA's consultant suggest that development opportunities at the site will likely remain positive due to the longer-term outlook of the analysis. OCTA will continue to monitor the evolving economic environment for potential implications on joint development. OCTA will seek funding for a Phase 2 study of joint development at the Fullerton Park-and-Ride facility. This Phase 2 study would review OCTA's joint development policies and develop site-specific goals, continue and broaden coordination with the City and stakeholders, gauge potential partnerships, and could potentially result in a request for information and/or request for proposals.

***Summary***

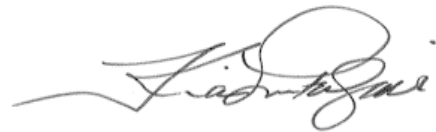
OCTA has completed a joint development study to address current conditions at the Fullerton Park-and-Ride facility that would enhance site vitality, support transit ridership, and improve financial stability. Findings show that joint development is feasible at the facility and could provide significant value to OCTA, customers, and the City. OCTA will seek funding to initiate a Phase 2 study of joint development to provide further consideration and more detailed analysis while continuing to engage the City and other stakeholders.

***Attachments***

- A. Joint Development Policy and Procedures
- B. Site Context
- C. Concepts
- D. Phased Option
- E. Fullerton Park-and-Ride Joint Development Study Report

**Prepared by:**

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**Approved by:**

Kia Mortazavi  
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Executive Office

  
 Chief Executive Officer

## JOINT DEVELOPMENT POLICY AND PROCEDURES

Policy#: EO-200.05JOINTDEVELOPOrigination Date: 09/26/2016Revised Date: 10/08/2019

### I. PURPOSE

The purpose of this policy is to encourage the joint development of Orange County Transportation Authority (OCTA) properties to increase transit ridership and generate new sources of revenue, consistent with local community goals.

### II. ORGANIZATIONAL UNITS AFFECTED

This policy applies to all OCTA-owned properties along transit routes.

### III. POLICY

- A. There is a public need for timely acquisition, design, construction, improvement, renovation, expansion, equipping, maintenance, and operation of transit systems in the OCTA service area. Authorizing private entities or other persons to develop all or a portion of the OCTA-owned properties may help address these needs and serve the public safety. This will also be a benefit to the welfare of the residents and businesses within the OCTA service area by making the projects available to the public in a timely or less costly fashion.
- B. The Federal Transit Administration (FTA) promotes joint development to maximize the utility of FTA-funded projects and encourage transit agencies to generate program income through joint development. According to the FTA, the benefits of joint development include revenue generation for the transit system through "value capture" mechanisms, such as income derived from rental or lease payments, and private sector contributions to public infrastructure.
- C. In addition, appropriate joint development may help to:
  1. Support and enhance economic growth
  2. Increase the efficient use of infrastructure
  3. Reduce the cost of infrastructure to the public sector
  4. Use land more efficiently
  5. Lower housing and transportation costs
  6. Reduce congestion and greenhouse gases
  7. Promote alternatives to drive-alone trips.
- D. Therefore, it is the policy of OCTA to encourage and pursue joint development projects on OCTA-owned properties along OCTA transit routes including office, commercial, residential, and other facilities to promote the safety, convenience, accessibility, environmental and air quality, and economic benefits to the public.

**Executive Office**  
**JOINT DEVELOPMENT POLICY AND PROCEDURES**

**Policy#:** EO-200.05JOINTDEVELOP

**Origination Date:** 09/26/2016

**Revised Date:** 10/08/2019

**E. The goals of this policy are to:**

1. Comply with regional growth principles as developed by local elected officials
2. Efficiently and adequately operate and maintain OCTA infrastructure
3. Promote regional mobility through transportation choices
4. Promote regional collaboration
5. Pursue opportunities that supplement OCTA's ability to provide safe, reliable, and courteous countywide transit services
6. Increase transit ridership through coordinated planning of land use and development of properties at or near OCTA stops, stations, and transit centers
7. Encourage high quality development projects on and around OCTA properties and along OCTA transit routes that enhance revenues to the transit system
8. Enhance financial capabilities of the agency to sustain countywide transit services

**IV. DEFINITIONS**

Joint Development - refers to an OCTA public transportation asset or project that is integrally related to and/or co-located with commercial, residential, or mixed-use development. Joint development may include partnerships for public, private, and/or non-profit development associated typically with rail or bus transit systems and other OCTA assets that are being improved through new construction, renovation, or extension.

**V. PROCEDURE**

**A. The following principles will guide OCTA's approach to joint development projects:**

1. OCTA will work through an open and transparent process, including a predictable and timely decision-making process to foster a positive investment climate for the private sector.
2. OCTA will follow all applicable zoning, planning, and permitting processes.
3. OCTA will involve relevant city staff, planning commissions, mayors, and councils.
4. OCTA should work cooperatively with local jurisdictions, developers, and other public and private sector entities to promote land use policies that encourage high quality development on and surrounding transit properties and routes.
5. OCTA should promote joint development projects that enhance the use of the transit system and encourage connections from surrounding developments to promote pedestrian and bike access.
6. OCTA should consider development opportunities in the acquisition of additional property for new transit facilities.
7. OCTA will retain appropriate authority over its assets and facilities.



**Executive Office**  
**JOINT DEVELOPMENT POLICY AND PROCEDURES**

**Policy#:** EO-200.05JOINTDEVELOP

**Origination Date:** 09/26/2016

**Revised Date:** 10/08/2019

8. Joint development projects must demonstrate, at a minimum, fair market value to OCTA.
  9. OCTA joint development revenue sharing agreements will target a fair share of gross profit/sales profit (before deducting any overhead, payroll, taxes, or interest payments.)
  10. OCTA will include a Title VI analysis as part of any joint development proposal.
- B.** OCTA will periodically conduct market feasibility studies and site assessments for OCTA-owned properties. This effort will include consultation with local agencies regarding land use and development in the project area. The studies will be used to prioritize projects that will be presented to the Board for direction and action. Studies will include necessary information regarding environmental and FTA compliance procedures and other requirements.
- C.** Joint Development studies will be the basis for soliciting development proposals for appropriate OCTA-owned transit properties. In soliciting proposals, OCTA will use the request for proposal (RFP) and procurement process to solicit competitive proposals from potential partners. In addition to the RFP evaluation committee, OCTA may convene an urban design panel to serve in an advisory capacity to the evaluation committee. All recommendations by the urban design panel are advisory but fall within OCTA procurement policies (including, but not limited to, standards of conduct, conflict of interest, and other requirements as included in the current OCTA Procurement Policy Manual.) The site-specific RFP shall include a draft development agreement that includes project development tasks (e.g., planning, environmental clearance, final design, permits, construction, etc.), draft ground lease, and other OCTA requirements for the future joint development project. Specific project task authorization by OCTA may proceed on a task-by-task basis in order to maintain continuing project control.

**VI. EXCEPTIONS**

Not applicable.

**VII. PROVISIONS AND CONDITIONS**

Not applicable.

**VIII. RELATED DOCUMENTS**

Not applicable.

**END OF POLICY**



## SITE CONTEXT

Site's location is on the north side of the I-5 and SR-91 interchange, providing convenient access to employment and population centers, as well as commercial destinations in Orange County and beyond. Please refer to the appendix section 7.1 for more details.

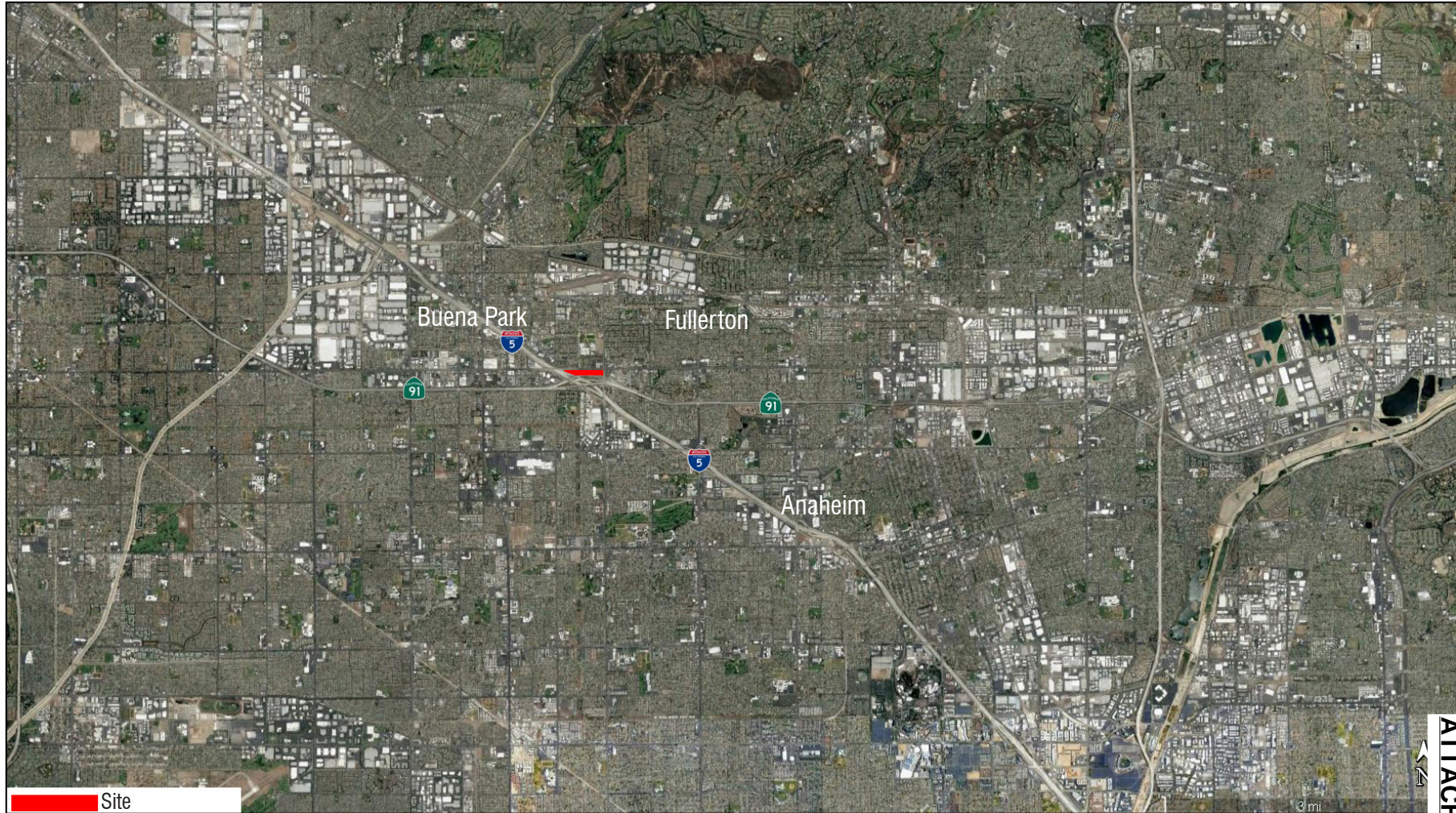


Figure 2.1. Regional Context

Data Source: Google Earth



The Site is located at the southwest corner of Orangethorpe Avenue and Magnolia Avenue, two major thoroughfares in North Orange County, as illustrated in Figure 2.2. It is a linear site with an overall area of 11.1 acres with 745 surface parking stalls. Please refer to the appendix section 7.1 for more details.

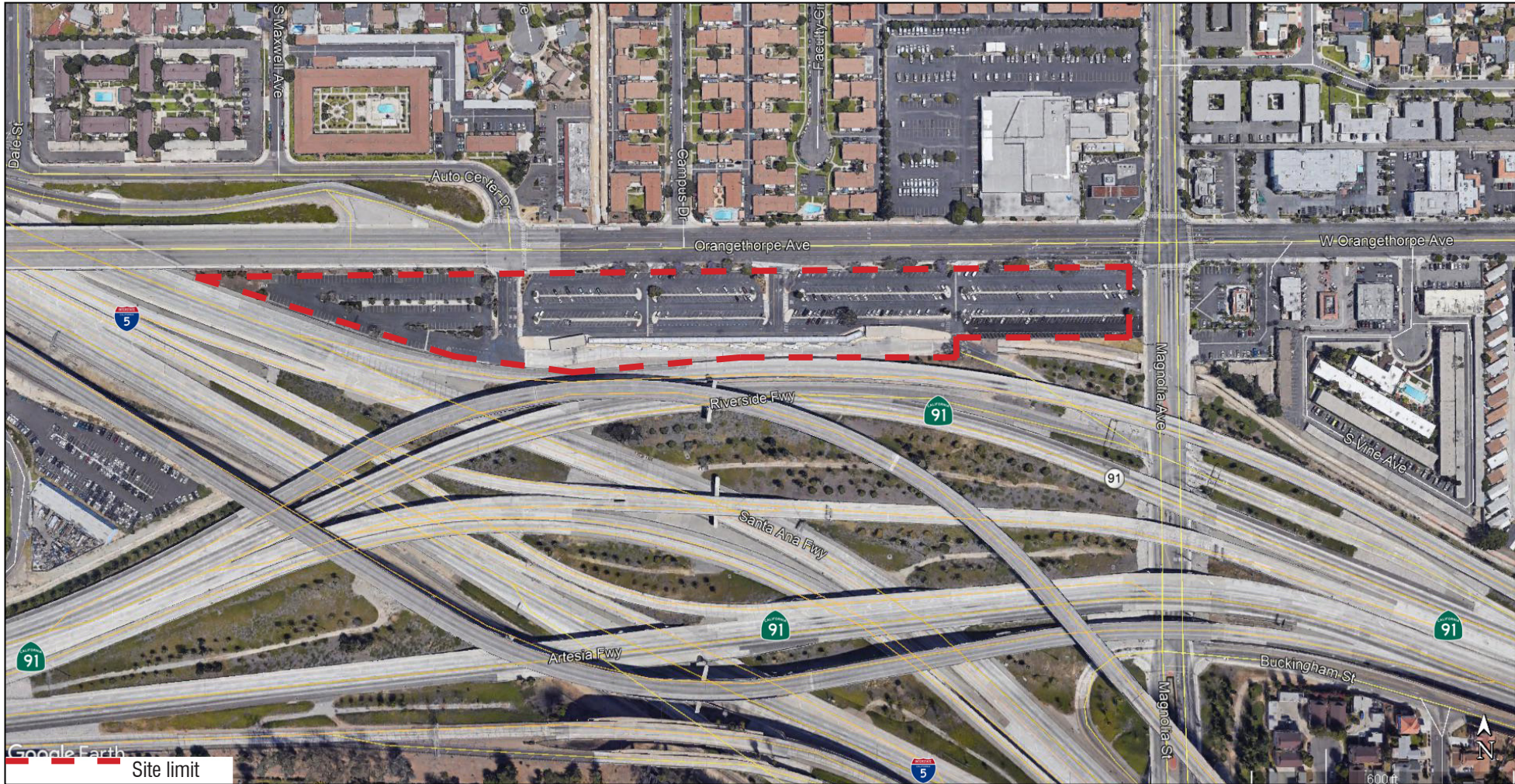


Figure 2.2. Aerial view of Fullerton Park-and-Ride site

Data Source: Google Earth

# CONCEPTS

ATTACHMENT C





## 3.1 CONCEPTS

Concepts were initially crafted and then narrowed to the final seven presented in this section of the report. These seven concepts:

- Evaluate market-rate and affordable/supportive housing types
- Reflect City and local developer input
- Create a range of configurations by creating districts which can be interchanged, phased, and adjusted to allow versatility for potential future development partners
- Encourage a mixture of uses (retail, residential, offices, affordable housing, supportive services) which not only complements the neighborhood built scale but also reflect the market study
- Allow for phased, efficient development that can be adjusted according to the market demand
- Provide accessible open spaces along the site for short term programming for the community
- Encourage a refined parking system to accommodate existing services and future development requirements



Figure 3.1. Site, looking east from existing facilities

3.2 LINEAR



Figure 3.2. Rendered view, looking west from Orangethorpe Avenue

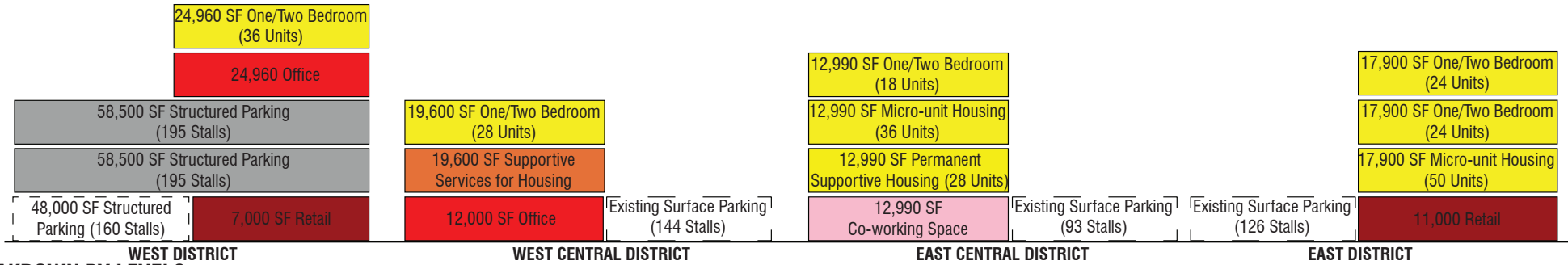
ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus circulation layout	-
CIRCULATION	Retains the existing bus parking (10 bus pads)	-
COMMUNITY	Addresses the goal of community by satisfying demands of affordable housing and supportive services	Lack of proper transition between areas with different types of land uses
DEVELOPMENT DENSITY	Consistent with the market study demand analysis	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires shared land-uses between districts to meet +/- 150 unit requirement
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains the existing surface parking	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.1. Strength and Weakness Analysis

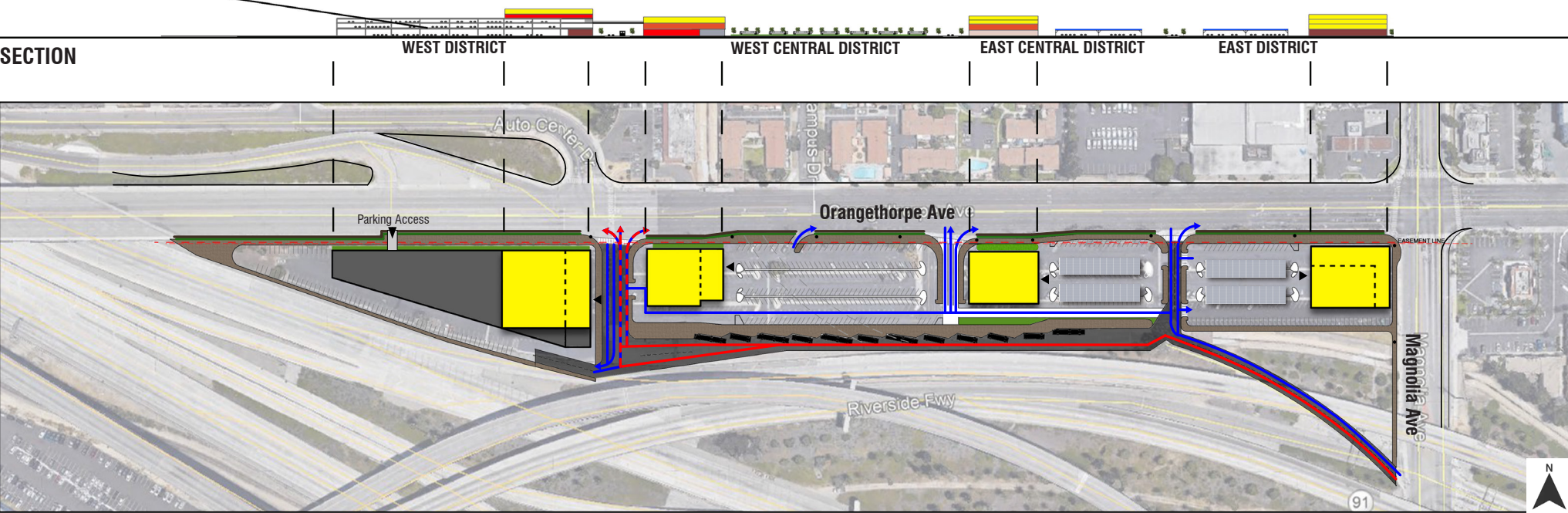


Required	+/- (37-44) Stalls	31 Stalls	71 Stalls	OCTA 265 Stalls	139 Stalls Available	34 Stalls	56 Stalls	+/- (28-34) Stalls	OCTA 144 Stalls	+/- (48-55) Stalls	39 Stalls	+/- (129-84) Stalls	49	
Provided	550 Stalls					124 Stalls Required	144 Stalls		93 Stalls		7 Stalls Required			126

PARKING ALLOCATION



BREAKDOWN BY LEVELS



PLAN (linear)

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	93,350	700	130	160
Micro-unit	30,890	350	88	44
Permanent Supportive Housing	12,990	450	28	14
Supportive Services for Housing	32,590			93
General & Community Retail	18,000	-	-	79
Co-working Space	12,990	-	-	37
Office	36,960	-	-	105
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	497
Total Stalls Required	-	-	-	906
Total Stalls Provided	-	-	-	913

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail
- Co-working Space
- Supportive Services for Housing

### 3.2.1 PROFORMA (LINEAR OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>							
Annual Net Operating Income	\$1,909,309	\$720,762	\$0	\$1,284,449	\$393,984		
Desired Yield on Cost*	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$34,714,716	\$13,104,756	\$0	\$17,125,992	\$5,253,120		
Net Building Value per Unit/Building SF	<b>\$267,036</b>	<b>\$152,381</b>	<b>\$0</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>							
Total Development Costs	\$29,672,994	\$10,715,940	\$4,176,533	\$15,829,024	\$3,509,818	\$16,153,800	\$1,831,200
TDC per Residential Unit/Commercial SF/Stall	<b>\$228,254</b>	<b>\$124,604</b>	<b>\$149,162</b>	<b>\$227.59</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>							
Supportable Residual Land Value	<b>\$5,041,722</b>	<b>\$2,388,816</b>	<b>\$0</b>	<b>\$1,296,968</b>	<b>\$1,743,302</b>	<b>-\$16,153,800</b>	<b>-\$1,831,200</b>
Land Value per Unit or Bldg SF	\$38,782	\$27,777	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				PRIVATE	<b>\$10,470,808</b>	PARKING	<b>-\$17,985,000</b>
Starting Annual Ground Lease at 6% of Value					\$628,248		
Annual Debt Service on Parking Costs**							-\$1,169,950
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***							38
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$1,958,727</b>

Table 3.2. Proforma Summary (Linear Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.



## ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 550 structured parking spaces and 363 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



*Figure 3.3. Rendered view of the proposed bus parking*

### 3.3 LAYERED



Figure 3.4. Built form context

ELEMENT	STRENGTHS	WEAKNESSES
<b>BUS OPERATIONS</b>	14 bus pads with a layered parking layout	Requires a disruption to existing bus service to change operational configuration
<b>CIRCULATION</b>	Centralizes bus operations thereby reducing the walking distances from parking areas.	Disrupts the existing bus layout
<b>COMMUNITY</b>	Addresses the goal of community by satisfying demands of affordable housing and supportive services	-
<b>DEVELOPMENT DENSITY</b>	High-density development allowing for more residents and employees thereby increasing transit ridership	-
<b>ECONOMICS</b>	-	Requires structured parking for full buildout
<b>PARK-AND-RIDE</b>	-	Requires a parking structure to support the density
<b>PARKING</b>	Parking structure wrapped with active uses. Distinct parking areas defined by uses	-
<b>PUBLIC SPACE</b>	Increased open space opportunities	Core of activity missing around the bus parking

Table 3.3. Strength and Weakness Analysis



Required	+/- (15-18) Stalls	66 Stalls	41 Stalls	OCTA 409 Stalls	20 Stalls	+/- (164-188) Stalls	53 Stalls	4 Stalls Available	+/- (46-59) Stalls	77 Stalls
Provided	550 Stalls			4 Stalls Required			241 Stalls	140 Stalls		

PARKING ALLOCATION

			26,600 SF One/Two Bedroom (38 Units)											
			26,600 SF One/Two Bedroom (38 Units)											
58,500 SF Structured Parking (195 Stalls)	7,200 SF Permanent Supp- ortive Housing (16 Units)	7,200 Office	26,600 SF One/Two Bedroom (38 Units)	26,400 SF Structured Parking (88 stalls)										
58,500 SF Structured Parking (195 Stalls)	7,200 SF Micro unit Housing (20 Units)	7,200 Office	26,600 SF One/Two Bedroom (38 Units)	26,400 SF Structured Parking (88 stalls)										
48,000 SF Structured Parking (160 Stalls)	7,600 SF Retail	7,200 SF Supportive Services for Housing	7,200 Retail	18,290 SF Co-working Space	19,500 SF Structured Parking (65 stalls)	Existing Surface Parking (126 Stalls)								
WEST DISTRICT			WEST CENTRAL DISTRICT		EAST CENTRAL DISTRICT		EAST DISTRICT							
</														

### 3.3.1 PROFORMA (LAYERED OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>							
Annual Net Operating Income	\$2,919,925	\$170,932	\$0	\$736,689	\$704,137		
Desired Yield on Cost*	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$53,089,554	\$3,107,847	\$0	\$9,822,514	\$9,388,493		
Net Building Value per Unit/Building SF	<b>\$265,448</b>	<b>\$155,392</b>	<b>\$0</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>							
Total Development Costs	\$45,379,200	\$2,541,330	\$2,314,937	\$9,078,645	\$6,272,825	\$16,971,300	\$8,894,400
TDC per Residential Unit/Commercial SF/Stall	<b>\$226,896</b>	<b>\$127,066</b>	<b>\$144,684</b>	<b>\$227.59</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>							
Supportable Residual Land Value	<b>\$7,710,355</b>	<b>\$566,518</b>	<b>\$0</b>	<b>\$743,869</b>	<b>\$3,115,668</b>	<b>-\$16,971,300</b>	<b>-\$8,894,400</b>
Land Value per Unit or Bldg SF	\$38,552	\$28,326	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				PRIVATE	<b>\$12,136,409</b>	PARKING	<b>-\$25,865,700</b>
Starting Annual Ground Lease at 6% of Value					\$728,185		
Annual Debt Service on Parking Costs**							-\$1,682,601
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***							44
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$7,290,113</b>

Table 3.4. Proforma Summary (Layered Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

# ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 791 structured parking spaces and 140 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



Figure 3.5. Rendered view of the proposed transition plaza



3.4 HORSE-SHOE I



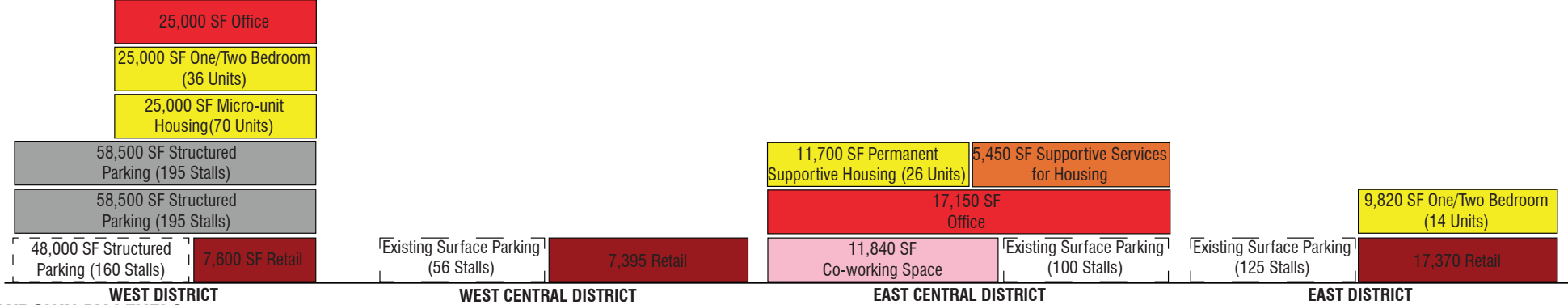
Figure 3.6. Proposed Retail (East District)

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Compact bus parking layout	Requires a disruption to existing bus service to change operational configuration
CIRCULATION	Centralizes bus operations thereby reducing the walking distances from parking areas	Disrupts the existing bus layout
COMMUNITY	Addresses the goal of community by satisfying demands of affordable housing and supportive services	-
DEVELOPMENT DENSITY	High activity non-residential uses engage the street. Local retail adjacent to the bus parking	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires a parking structure to support the density
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	-	Requires structured parking for full buildout
PUBLIC SPACE	Increased open space opportunities around the bus plaza	Public space concentrated in west central district

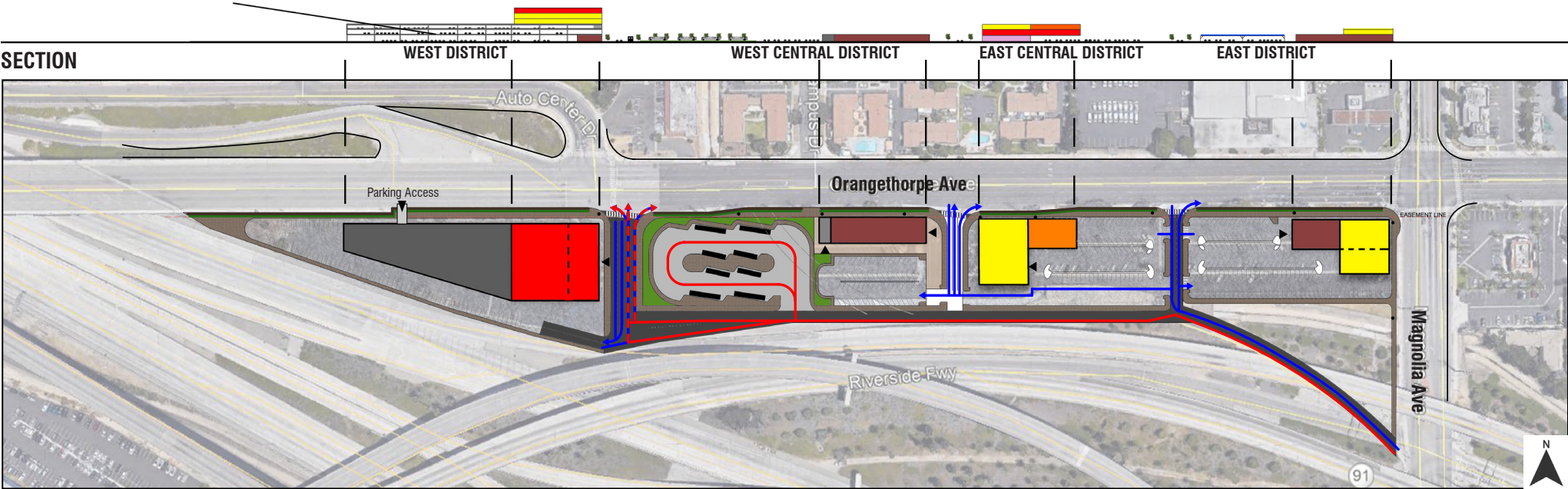
Table 3.5. Strength and Weakness Analysis

Required	+/- (67-79) Stalls	34 Stalls	71 Stalls	OCTA 409 Stalls	33 Stalls	23 Stalls Available	+/- (10-13) Stalls	34 Stalls	49 Stalls	15 Stalls	31 Stalls Available	+/- (14-17) Stalls	77 Stalls
Provided	550 Stalls	43 Stalls Required	56 Stalls	100 Stalls	11 Stalls Required	125 Stalls							

PARKING ALLOCATION



BREAKDOWN BY LEVELS



PLAN (Horseshoe 1)

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	34,820	700	50	62
Micro-unit	25,000	350	70	35
Permanent Supportive Housing	11,700	450	26	13
Supportive Services for Housing	5,450			15
General & Community Retail	32,365	-	-	143
Co-working Space	11,840	-	-	34
Office	42,150	-	-	120
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	421
Total Stalls Required	-	-	-	830
Total Stalls Provided	-	-	-	831

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail
- Co-working Space
- Supportive Services for Housing

Not To Scale



### 3.4.1 PROFORMA (HORSESHOE I OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>							
Annual Net Operating Income	\$720,361	\$593,513	\$0	\$1,097,738	\$708,405		
Desired Yield on Cost*	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$13,097,480	\$10,791,136	\$0	\$14,636,506	\$9,445,402		
Net Building Value per Unit/Building SF	<b>\$261,950</b>	<b>\$154,159</b>	<b>\$0</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>							
Total Development Costs	\$11,195,294	\$8,824,062	\$3,761,773	\$13,528,068	\$6,310,848	\$13,766,700	\$4,218,300
TDC per Residential Unit/Commercial SF/Stall	<b>\$223,906</b>	<b>\$126,058</b>	<b>\$144,684</b>	<b>\$227.59</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>							
Supportable Residual Land Value	<b>\$1,902,186</b>	<b>\$1,967,075</b>	<b>\$0</b>	<b>\$1,108,437</b>	<b>\$3,134,554</b>	<b>-\$13,766,700</b>	<b>-\$4,218,300</b>
Land Value per Unit or Bldg SF	\$38,044	\$28,101	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				<b>PRIVATE</b>	<b>\$8,112,252</b>	<b>PARKING</b>	<b>-\$17,985,000</b>
Starting Annual Ground Lease at 6% of Value					\$486,735		
Annual Debt Service on Parking Costs**							-\$1,169,950
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***							46
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$5,568,655</b>

Table 3.6. Proforma Summary (Horseshoe 1 Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

# ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 550 structured parking spaces and 281 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



*Figure 3.7. Rendered view of the proposed transition plaza along Orangethorpe Ave*

3.5 HORSE-SHOE II



Figure 3.8. View of the proposed retail and surface parking with carports from Orangethorpe Avenue

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Compact bus parking layout	Requires a disruption to existing bus service to change operational configuration
CIRCULATION	Centralizes bus operations thereby reducing the walking distances from parking areas	-
COMMUNITY	Addresses the goal of community by satisfying demands of affordable housing and supportive services	-
DEVELOPMENT DENSITY	High activity non-residential uses engage the street	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Doesn't meet the requirement of +/- 150 units/district
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains some of the existing parking layout	Requires structured parking for full buildout
PUBLIC SPACE	Consolidated open space around the bus operations	-

Table 3.7. Strength and Weakness Analysis



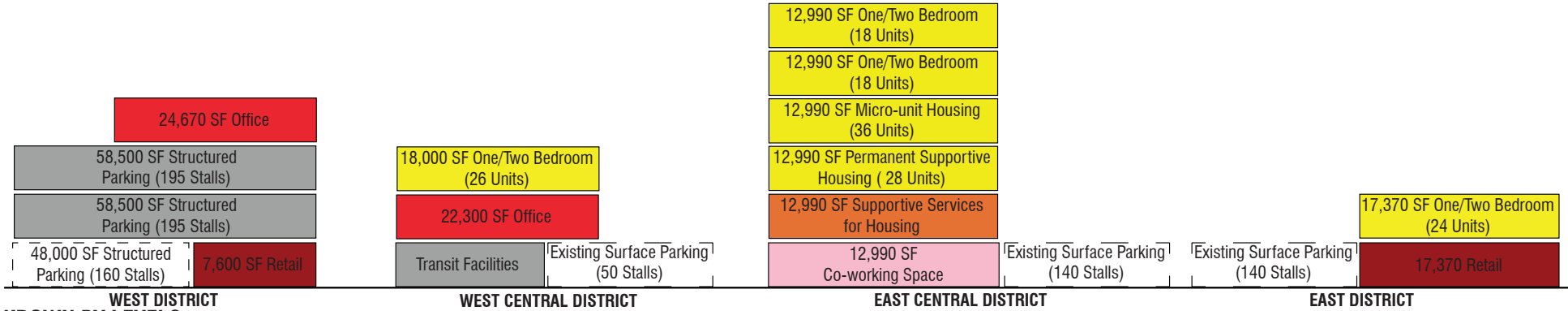
Required 34 Stalls 70 Stalls OCTA 409 Stalls 37 Stalls Available  
 Provided 550 Stalls

63 Stalls +/- (27-32) Stalls  
 45 Stalls Required 50 Stalls

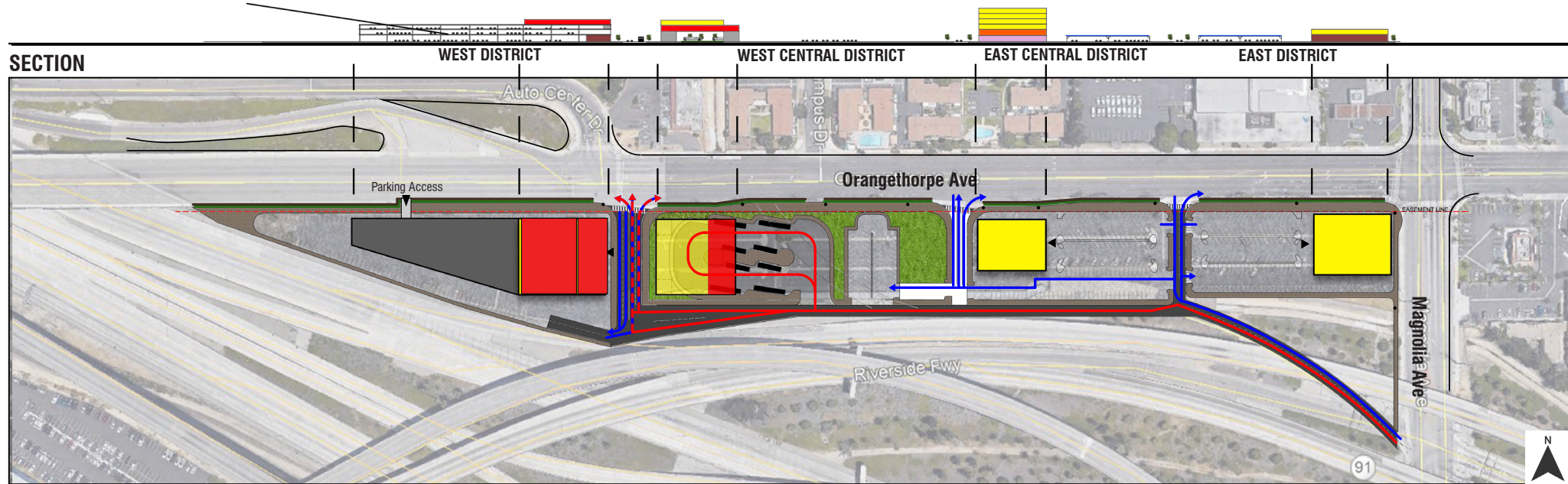
+/- (67-79) Stalls 37 Stalls 37 Stalls  
 140 Stalls 12 Stalls Required

32 Stalls Available +/- (26-31) Stalls 77 Stalls  
 140 Stalls

## PARKING ALLOCATION



## BREAKDOWN BY LEVELS



## PLAN (Horseshoe II)

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail
- Co-working Space
- Supportive Services for Housing

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	46,970	700	82	108
Micro-unit	12,990	350	36	19
Permanent Supportive Housing	12,990	450	28	14
Supportive Services for Housing	12,990			37
General & Community Retail	24,970	-	-	143
Co-working Space	12,990	-	-	37
Office	46,970	-	-	133
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	458
Total Stalls Required	-	-	-	867
Total Stalls Provided	-	-	-	880

3.6 DEVELOPER I



Figure 3.9. Rendered view of the existing bus parking from Orangethorpe Avenue

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus operations layout	-
CIRCULATION	Retained the existing bus parking (10 bus pads)	-
COMMUNITY	-	Lacks gathering spaces for the community
DEVELOPMENT DENSITY	Consistent with the market demand for the market study (+/-150 Units/district)	-
ECONOMICS	Meets the requirement of +/-150 units/district	Requires structured parking for full buildout
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains some of the existing parking layout	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.8. Strength and Weakness Analysis



Required	+/- (131-151) Stalls	OCTA 9 Stalls	+/- (53-59) Stalls	OCTA 165 Stalls	71 Stalls Available	OCTA 235 Stalls	+/- (68-79) Stalls	27 Stalls	17 Stalls Available	+/- (128-145) Stalls	45 Stalls
Provided	160 Stalls		59 Stalls Required	165 Stalls		385 Stalls				209 Stalls	

PARKING ALLOCATION


### 3.6.1 PROFORMA (DEVELOPER I OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use			
	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>				
Annual Net Operating Income	\$5,445,121	\$527,501		
Desired Yield on Cost*	5.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$99,002,201	\$7,033,344		
Net Building Value per Unit/Building SF	\$233,496	\$292	N/A	N/A
<b>Costs</b>				
Total Development Costs	\$84,623,816	\$4,699,256	\$16,546,200	\$2,877,600
TDC per Residential Unit/Commercial SF/Stall	\$199,584	\$195	\$32,700	\$32,700
Land Value				
Supportable Residual Land Value	\$14,378,386	\$2,334,088	-\$16,546,200	-\$2,877,600
Land Value per Unit or Bldg SF	\$33,911	\$97		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>	PRIVATE	\$16,712,473	PARKING	-\$19,423,800
Starting Annual Ground Lease at 6% of Value		\$1,002,748		
Annual Debt Service on Parking Costs**				-\$1,263,546
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***				24
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>				<b>\$6,155,760</b>

Table 3.9. Proforma Summary (Developer 1 Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.



## ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 594 structured parking spaces and 325 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings."

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

## 3.6.2 ALTERNATIVES

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

Alternative I: OCTA will be funding all of the structured parking required for private uses as well as any structured spaces required to provide 409 total spaces for OCTA. For example, this diagram shows 919 total spaces, of which 325 are surface and the remaining 594 are structured. Let's consider the cost of all that structured parking (about \$19.5M as of right now), assume that OCTA is financing that over 30 years, and compare that to the ground lease a private developer may be willing to pay for the rights to develop the indicated amount of housing and commercial space. As of right now, it appears that the total "residual land value" of the development program in Developer Option 1 does not exceed the cost of the structured parking, and OCTA would not be recouping its investment through ground lease payments for 20+ years, but after that the garage would be paid off and net ground lease revenues would accrue to OCTA.

Alternative II: The alternative to this approach is that the developer would have to pay for the structured parking, at least their own, but that essentially wipes out the residual land value entirely (the land for development is worth less than the cost of the parking) plus the developer's return threshold is higher than OCTA's, and OCTA essentially would not expect to get any ground lease revenue ever.

## 3.7 DEVELOPER II



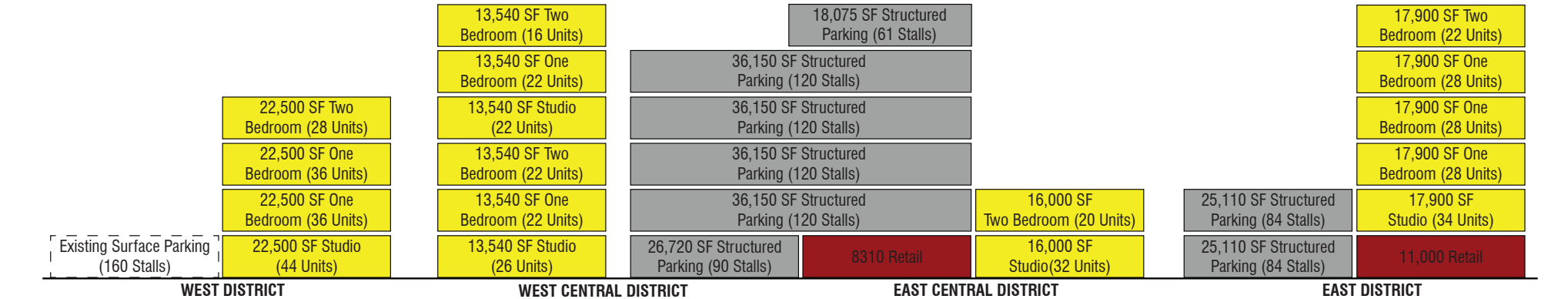
Figure 3.10 Rendered view of the transition plaza and bus parking

ELEMENT	STRENGTHS	WEAKNESSES
<b>BUS OPERATIONS</b>	14 bus pads with a layered parking layout	Requires a disruption to existing bus service to change operational configuration
<b>CIRCULATION</b>	Centralizes bus operations thereby reducing the walking distances from parking areas.	Disrupts the existing bus layout
<b>COMMUNITY</b>	Addresses the goal of community by providing gathering spaces for neighborhood uses	-
<b>DEVELOPMENT DENSITY</b>	High-density development allowing for more residents and employees thereby increasing transit ridership (+/- 150 Units/district)	-
<b>ECONOMICS</b>	Meets the requirement of +/-150 units/district	Requires structured parking for full buildout
<b>PARK-AND-RIDE</b>	-	Park-and-Ride not in close proximity to the bus plaza
<b>PARKING</b>	Parking structure wrapped with active uses	Requires structured parking for full buildout
<b>PUBLIC SPACE</b>	Increased open space opportunities around the bus plaza	Public space concentrated in west central district

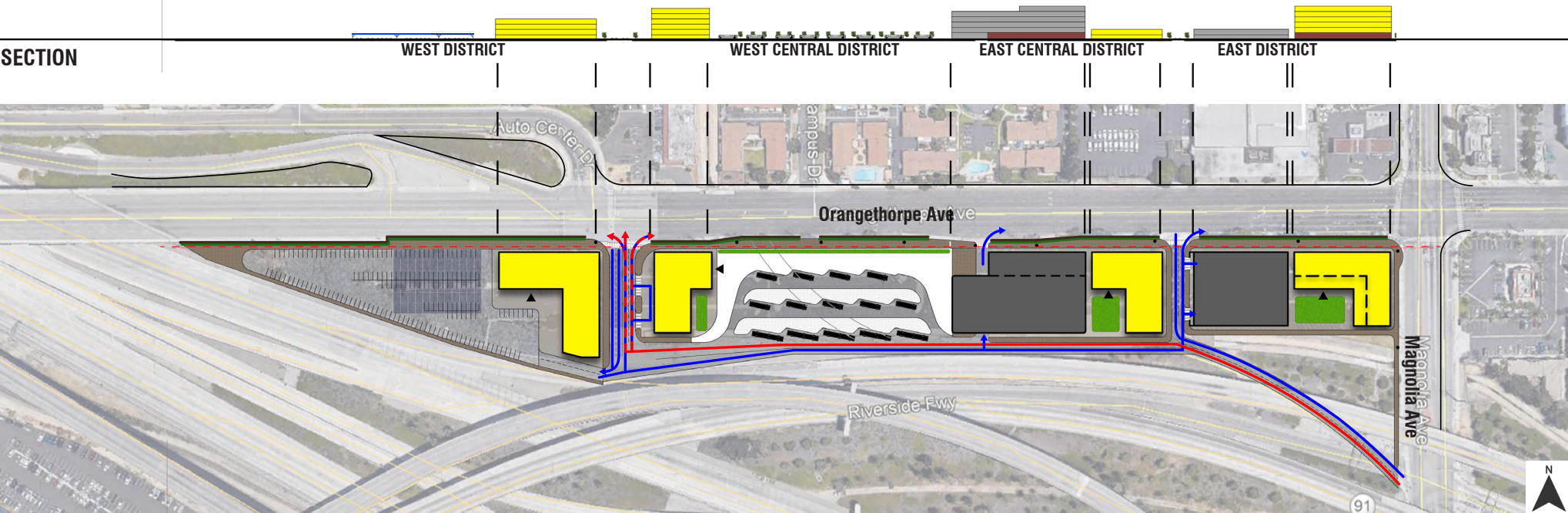
Table 3.10. Strength and Weakness Analysis

Required	+/- (129-147) Stalls	13 Stalls Available	7 Stalls Available	OCTA 409 Stalls	+/- (167-190) Stalls	25 Stalls	+/- (129-147) Stalls	33 Stalls
Provided	160 Stalls				631 Stalls		12 Stalls Required	168 Stalls

PARKING ALLOCATION



BREAKDOWN BY LEVELS



PLAN

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
Studio Unit	69,940	500	138	104
One Bedroom Unit	152,860	600	248	248
Two Bedroom Unit	69,940	800	88	132
General & Community Retail	19,310	-	-	58
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	541
Total Stalls Required	-	-	-	950
Total Stalls Provided	-	-	-	959



### 3.7.1 PROFORMA (DEVELOPER II OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use			
	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>				
Annual Net Operating Income	\$6,056,249	\$422,657		
Desired Yield on Cost*	5.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$110,113,619	\$5,635,430		
Net Building Value per Unit/Building SF	<b>\$236,295</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>				
Total Development Costs	\$94,121,489	\$3,765,255	\$17,429,100	\$8,698,200
TDC per Residential Unit/Commercial SF/Stall	<b>\$201,977</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>				
Supportable Residual Land Value	<b>\$15,992,130</b>	<b>\$1,870,176</b>	<b>-\$17,429,100</b>	<b>-\$8,698,200</b>
Land Value per Unit or Bldg SF	\$34,318	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>	PRIVATE	<b>\$17,862,306</b>	PARKING	<b>-\$26,127,300</b>
Starting Annual Ground Lease at 6% of Value		\$1,071,738		
Annual Debt Service on Parking Costs**				-\$1,699,618
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***				34
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>				<b>\$1,212,155</b>

Table 3.11. Proforma Summary (Developer 2 Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

# ASSUMPTIONS

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 799 structured parking spaces and 160 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings."

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



Figure 3.11 Rendered view of the proposed bus parking layout



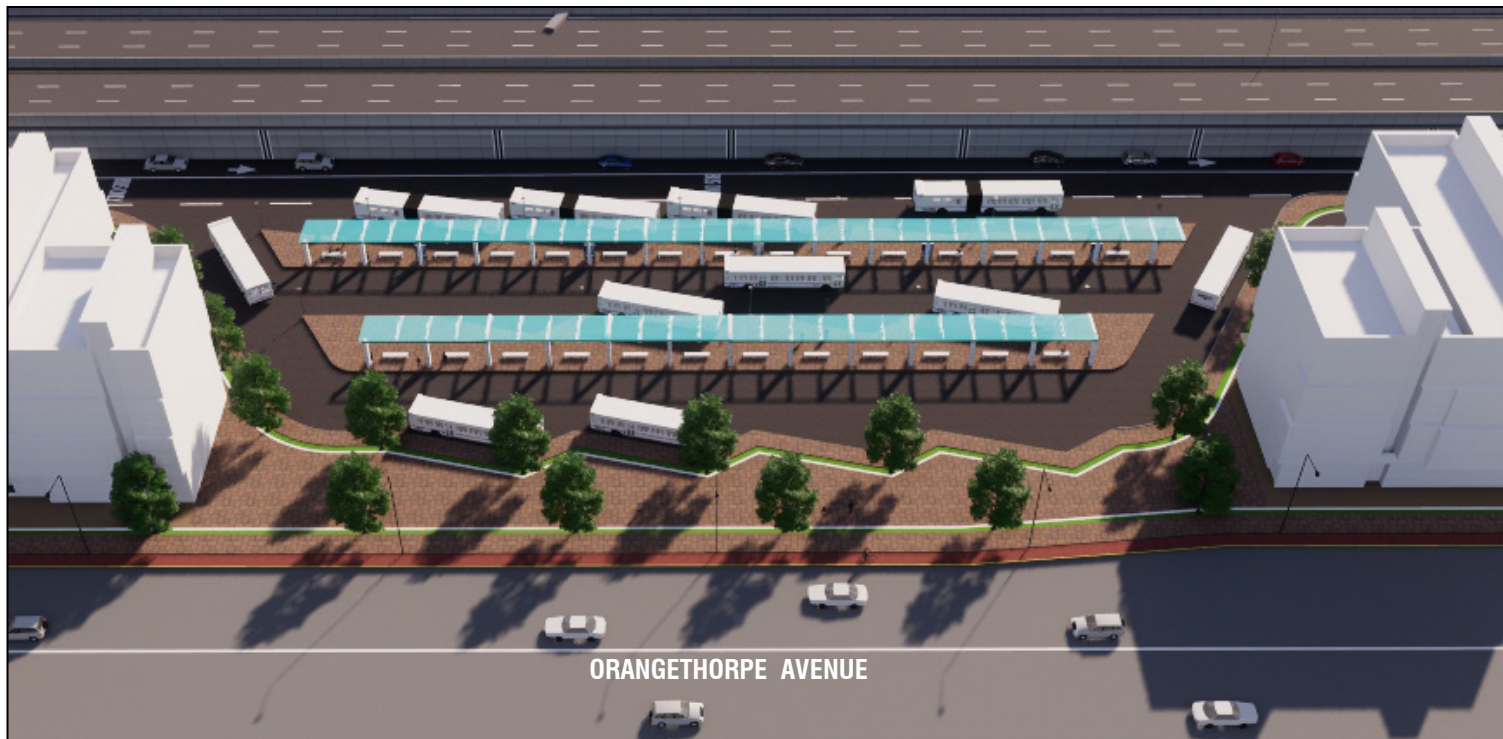


Figure 3.12. Rendered view of the proposed bus parking layout (West Central District)



Figure 3.13. Rendered view of surface parking with proposed solar carports (East District)





Figure 3.14. Rendered view of the transition plaza from West District



Figure 3.15. Rendered view of the proposed bus parking layout from Riverside Fwy

### 3.8 PHASED OPTION

The Phased Option keeps OCTA parking requirements (409 stalls) in mind, with only a portion of the site (East District and East Central District) built with existing surface parking supporting it, as illustrated in Figure 3.16.



Figure 3.16. View of the proposed development with surface parking

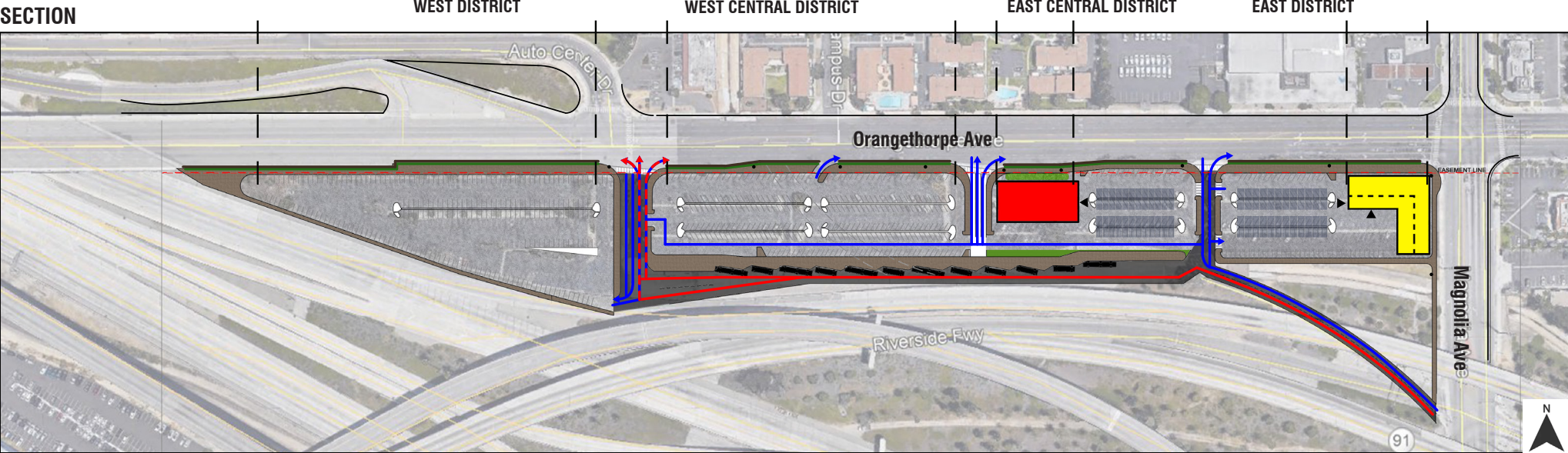
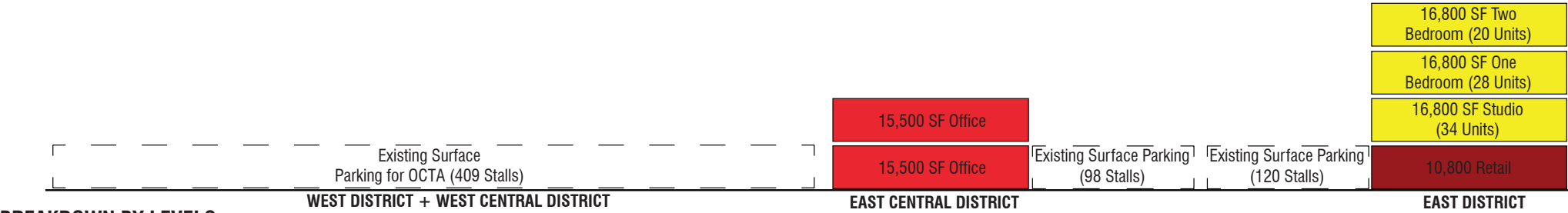
ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus circulation layout	-
CIRCULATION	Retains the existing bus parking (10 bus pads)	-
COMMUNITY	-	Lack of proper transition between areas with different types of land uses
DEVELOPMENT DENSITY	Consistent with the market study demand analysis	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires shared land-uses between districts to meet +/- 150 unit requirement
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains the existing surface parking	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.12. Strength and Weakness Analysis (Phased Option)



Required	409 Stalls	90 Stalls	8 Stalls Available	+/- (71-84) Stalls	32 Stalls
Provided	409 Stalls	98 Stalls		120 Stalls	

PARKING ALLOCATION



PLAN (Phased)

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	33,600	700	48	67
Studio	16,800	350	34	17
Office	31,000	-	-	90
General & Community Retail	10,800	-	-	32
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	206
Total Stalls Required	-	-	-	615
Total Stalls Provided	-	-	-	627

Summary (Phased Option)

### 3.8.1 PROFORMA (PHASED OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use				
	Apartments	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>					
Annual Net Operating Income	\$1,042,683	\$572,508	\$236,390		
Desired Yield on Cost*	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$18,957,868	\$7,633,440	\$3,151,872		
Net Building Value per Unit/Building SF	<b>\$231,194</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>					
Total Development Costs	\$16,204,560	\$7,055,352	\$2,105,891	\$0	\$0
TDC per Residential Unit/Commercial SF/Stall	<b>\$197,617</b>	<b>\$227.59</b>	<b>\$194.99</b>		
<b>Land Value</b>					
Supportable Residual Land Value	<b>\$2,753,308</b>	<b>\$578,088</b>	<b>\$1,045,981</b>	<b>\$0</b>	<b>\$0</b>
Land Value per Unit or Bldg SF	\$33,577	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>		<b>PRIVATE</b>	<b>\$4,377,377</b>	<b>PARKING</b>	<b>\$0</b>
Starting Annual Ground Lease at 6% of Value			\$262,643		
Annual Debt Service on Parking Costs**					\$0
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***					0
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>					<b>\$6,699,869</b>

Table 3.13. Proforma Summary (Phased Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

# ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the housing, office, and retail developments are assumed to utilize existing spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

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- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

PHASED OPTION

The Phased Option keeps OCTA parking requirements (409 stalls) in mind, with only a portion of the site (East District and East Central District) built with existing surface parking supporting it, as illustrated in Figure 3.16.



Figure 3.16. View of the proposed development with surface parking

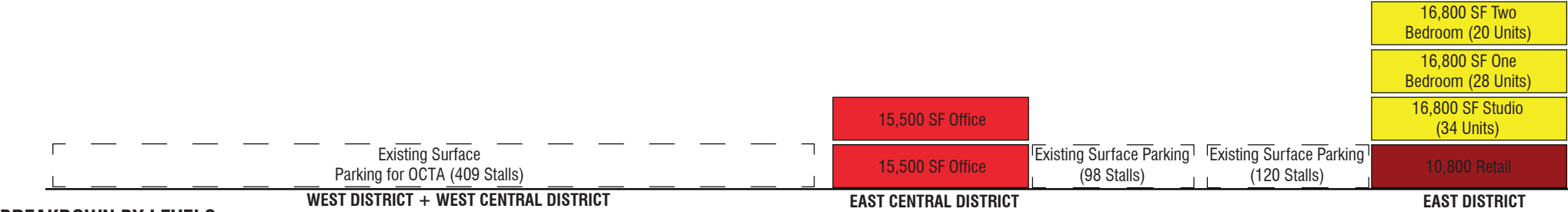
ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus circulation layout	-
CIRCULATION	Retains the existing bus parking (10 bus pads)	-
COMMUNITY	-	Lack of proper transition between areas with different types of land uses
DEVELOPMENT DENSITY	Consistent with the market study demand analysis	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires shared land-uses between districts to meet +/- 150 unit requirement
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains the existing surface parking	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.12. Strength and Weakness Analysis (Phased Option)

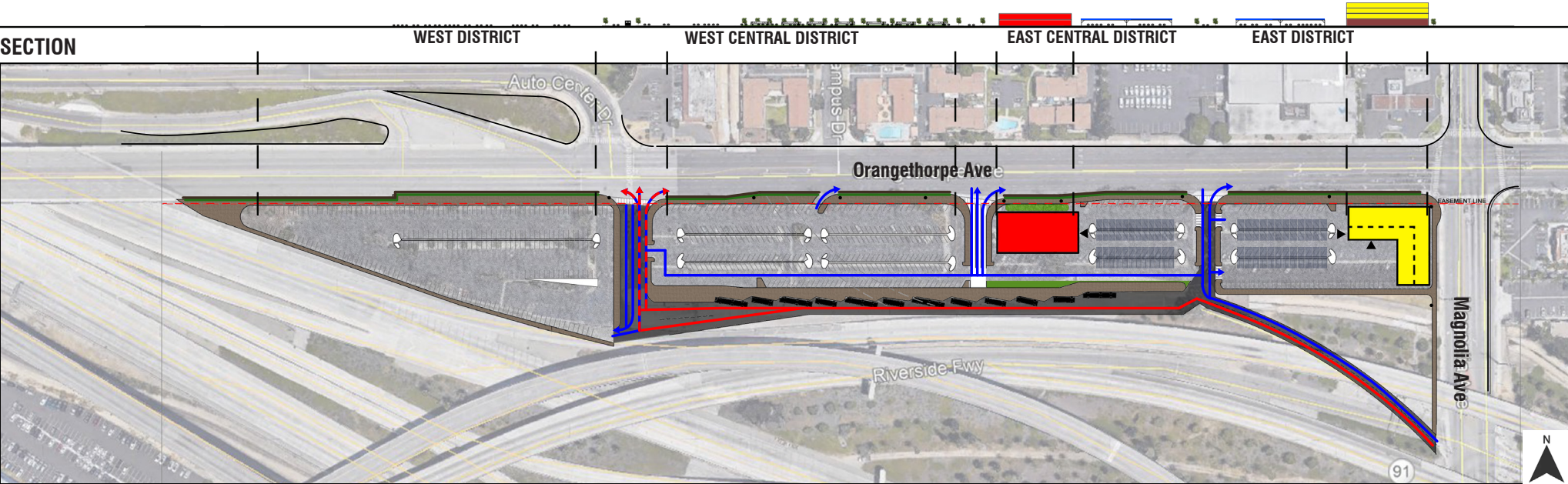


Required	409 Stalls	90 Stalls	8 Stalls Available	+/- (71-84) Stalls	32 Stalls
Provided	409 Stalls	98 Stalls		120 Stalls	

PARKING ALLOCATION



BREAKDOWN BY LEVELS



PLAN (Phased)

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	33,600	700	48	67
Studio	16,800	350	34	17
Office	31,000	-	-	90
General & Community Retail	10,800	-	-	32
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	206
Total Stalls Required	-	-	-	615
Total Stalls Provided	-	-	-	627

Summary (Phased Option)

### 3.8.1 PROFORMA (PHASED OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

	Land Use				
Item	Apartments	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>					
Annual Net Operating Income	\$1,042,683	\$572,508	\$236,390		
Desired Yield on Cost*	5.50%	7.50%	7.50%		
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<b>Costs</b>					
Total Development Costs	\$16,204,560	\$7,055,352	\$2,105,891	\$0	\$0
TDC per Residential Unit/Commercial SF/Stall	<b>\$197,617</b>	<b>\$227.59</b>	<b>\$194.99</b>		
<b>Land Value</b>					
Supportable Residual Land Value	<b>\$2,753,308</b>	<b>\$578,088</b>	<b>\$1,045,981</b>	<b>\$0</b>	<b>\$0</b>
Land Value per Unit or Bldg SF	\$33,577	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>		<b>PRIVATE</b>	<b>\$4,377,377</b>	<b>PARKING</b>	<b>\$0</b>
Starting Annual Ground Lease at 6% of Value			\$262,643		
Annual Debt Service on Parking Costs**					\$0
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***					0
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>					<b>\$6,699,869</b>

Table 3.13. Proforma Summary (Phased Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

# ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the housing, office, and retail developments are assumed to utilize existing spaces.

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- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking





# FULLERTON PARK-AND-RIDE

## *JOINT DEVELOPMENT STUDY REPORT*

ATTACHMENT E

Fullerton Park-and-Ride  
Orange County Transportation Authority  
Fullerton, CA  
March 2020

**Prepared for:**

Orange County Transportation Authority

**Prepared By:**

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Tony Dang, VCA Engineers, Inc.

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# 01 EXECUTIVE SUMMARY

## 1.1 EXECUTIVE SUMMARY

The Orange County Transportation Authority (OCTA) is considering development options on its 11.1 acre Fullerton Park-and-Ride property (Site). The property's parking lots are currently underutilized, presenting the potential for development while retaining its role as a multi-modal transit hub. OCTA has retained a consultant team comprised of IBI Group, Economic & Planning Systems, Inc. (EPS) and VCA Engineers to support the transit agency in exploring the Site's development potential.

The facility serves as a regional transfer point for OCTA and Los Angeles County Metropolitan Authority (Metro) bus operations. The facility provides a total of 745 parking spaces, including 29 ADA spaces to Park-and-Ride customers.

OCTA's primary goals for the site's development are as follows:

- Identify land uses that would complement transit and Park-and-Ride usage at the site
- Provide additional revenues for OCTA
- Support the City of Fullerton and local neighborhood with desirable developments
- Provide services to the transit riders

These primary goals are implemented through conceptual land use plans along with parking configurations, an economic market study and recommendations for development options on the site. These concept plans:

- Reflect City and local developer input
- Evaluate the market-rate and affordable/supportive housing types
- Allow design and development flexibility through the use of districts
- Encourage a mixture of uses (retail, residential, offices, affordable housing, supportive services)
- Provide accessible open spaces along the site
- Encourage a refined parking system

Keeping the OCTA parking requirements (409 stalls) in mind, only a portion of the site could be built with surface parking supporting it, as of now. In the near future, structured parking strategies need to be explored in order to support more intense development of the site. A phased approach to development of the site is also recommended with options for shared parking.

Overall, the purpose of this document is to set forth the vision, and present options along with next steps that will help determine the future development potential of the site. Graphic depictions used in this report are for illustrative purposes only. They are not intended to depict actual buildings but are a demonstration of the site development.



Figure 1.1. Fullerton park-and-Ride Site

# 02 INTRODUCTION

## 2.1 INTRODUCTION

*Data Source: EPS*

The Orange County Transportation Authority (OCTA) is considering development options on its Fullerton Park-and-Ride property (Site) at the southwest corner of Orangethorpe and Magnolia Avenues. Although the Site is a functioning Park-and-Ride facility servicing several OCTA and Metro bus routes, the property's parking lots are underutilized, presenting the potential for development while retaining its role as a multi-modal transit hub.

The purpose of this report is to identify redevelopment strategies that will provide a framework for generating revenue, increasing transit ridership for the OCTA Fullerton Park-and-Ride facility and to help meet community needs.

## 2.2 STUDY GOALS

- Identify land uses that would complement transit and Park-and-Ride usage at the site
- Provide additional revenues for OCTA
- Support the City of Fullerton and local neighborhood with desirable developments
- Provide services to the transit riders

## 2.3 SCENARIO OBJECTIVES

The following objectives will be used to achieve the study's goals:

### **Transit and Rideshare Operations**

- Accommodate multimodal connections
- Provide curb drop-off areas
- Support Transit-Oriented Development
- Improve transit amenities

### **Site Development**

- Provide legible and predictable circulation for all modes
- Enhance security
- Provide complementary land-uses that support on-site transit, residential, and office use

### **Economics**

- Generate new revenue streams for OCTA
- Provide economic sustainability and stability
- Flexibility to adapt to market conditions
- Provide housing options that address market needs

### **Community**

- Emphasize the community context
- Provide communal spaces for neighborhood uses



## 2.4 REGIONAL CONTEXT

Site's location is on the north side of the I-5 and SR-91 interchange, providing convenient access to employment and population centers, as well as commercial destinations in Orange County and beyond. Please refer to the appendix section 7.1 for more details.

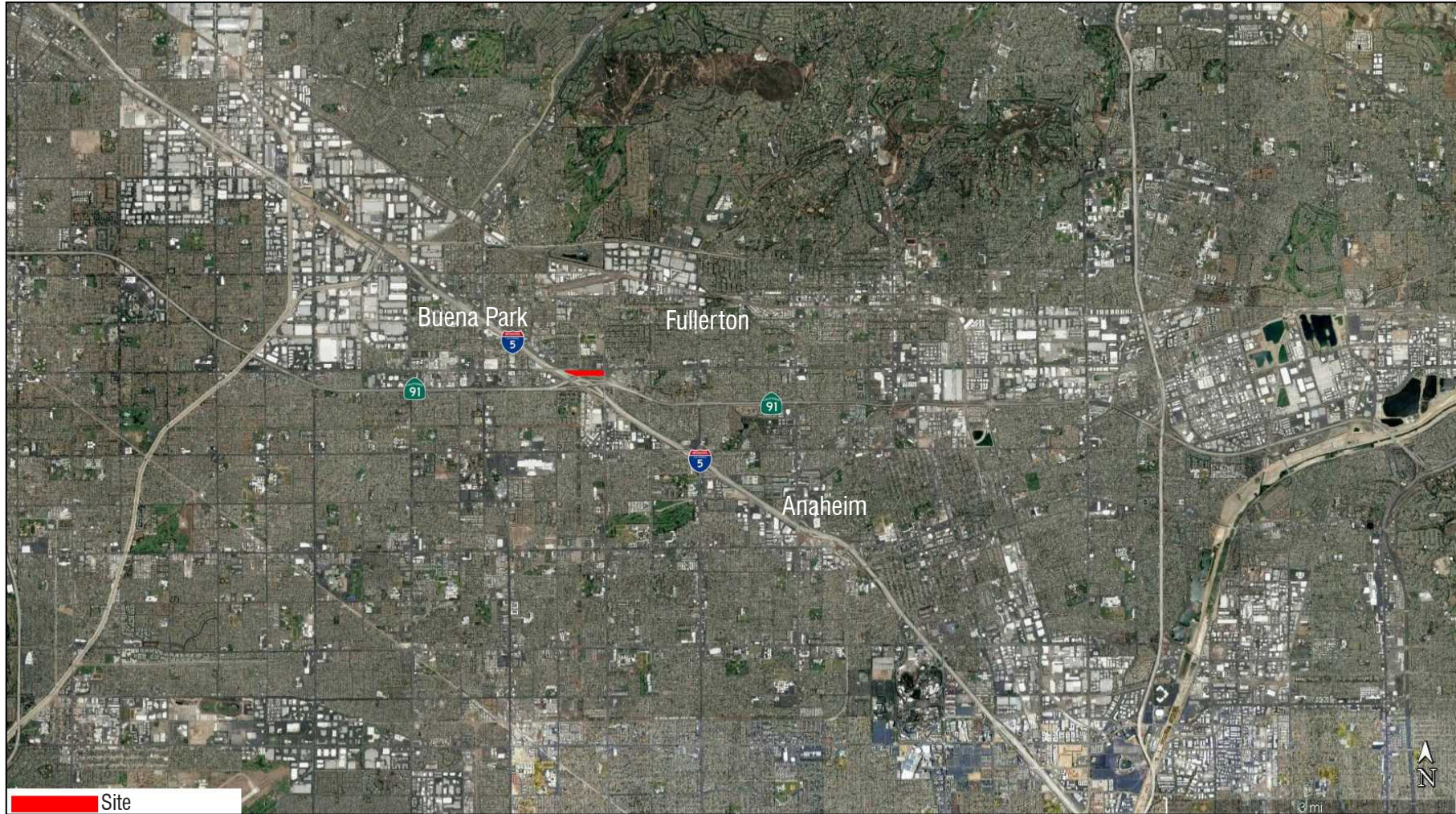


Figure 2.1. Regional Context

Data Source: Google Earth



## 2.5 SITE CONTEXT

The Site is located at the southwest corner of Orangethorpe Avenue and Magnolia Avenue, two major thoroughfares in North Orange County, as illustrated in Figure 2.2. It is a linear site with an overall area of 11.1 acres with 745 surface parking stalls. Please refer to the appendix section 7.1 for more details.

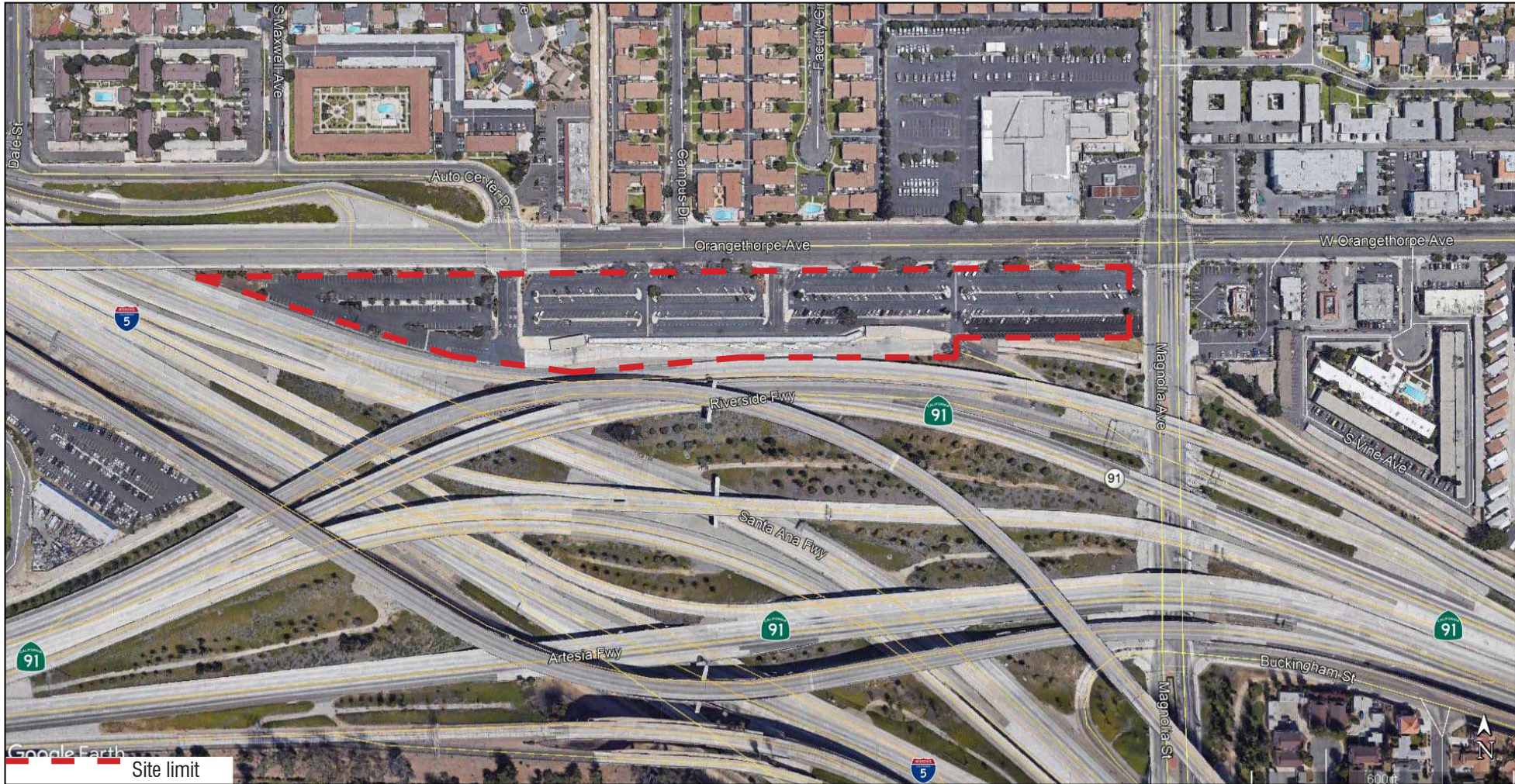


Figure 2.2. Aerial view of Fullerton Park-and-Ride site

Data Source: Google Earth



## 2.6 TRANSIT NETWORK

Seven OCTA bus routes and one LA Metro bus route serve the Fullerton Park-and-Ride site, as illustrated in Figure 2.3. Buses currently enter the site via the 91 West Freeway/Park-and-Ride entrance ramp, just south of the Park-and-Ride off Magnolia Street, or through the access driveways along Orangethorpe Avenue. Route 30 is the only route that does not enter the site, as it passes along Orangethorpe Avenue. Once at the Fullerton Park-and-Ride site, buses dock at one of fourteen existing bus bays located along the southern edge of the site. The Fullerton Park-and-Ride has covered bus bays for seven routes, including routes to Anaheim (including Disneyland), Buena Park (including Knott's Berry Farm), Placentia, Stanton, Westminster, Fountain Valley, Anaheim, Garden Grove, and Huntington Beach. Express bus service is offered to and from Los Angeles six times daily. In addition, OCTA recently introduced the Bravo! 529 rapid bus route that originates at the Fullerton Park-and-Ride and extends south to the Goldenwest Transportation Center. The site is easily accessible from local freeways via the I-5/Magnolia interchange. Please refer to the appendix section 7.1 for more details.

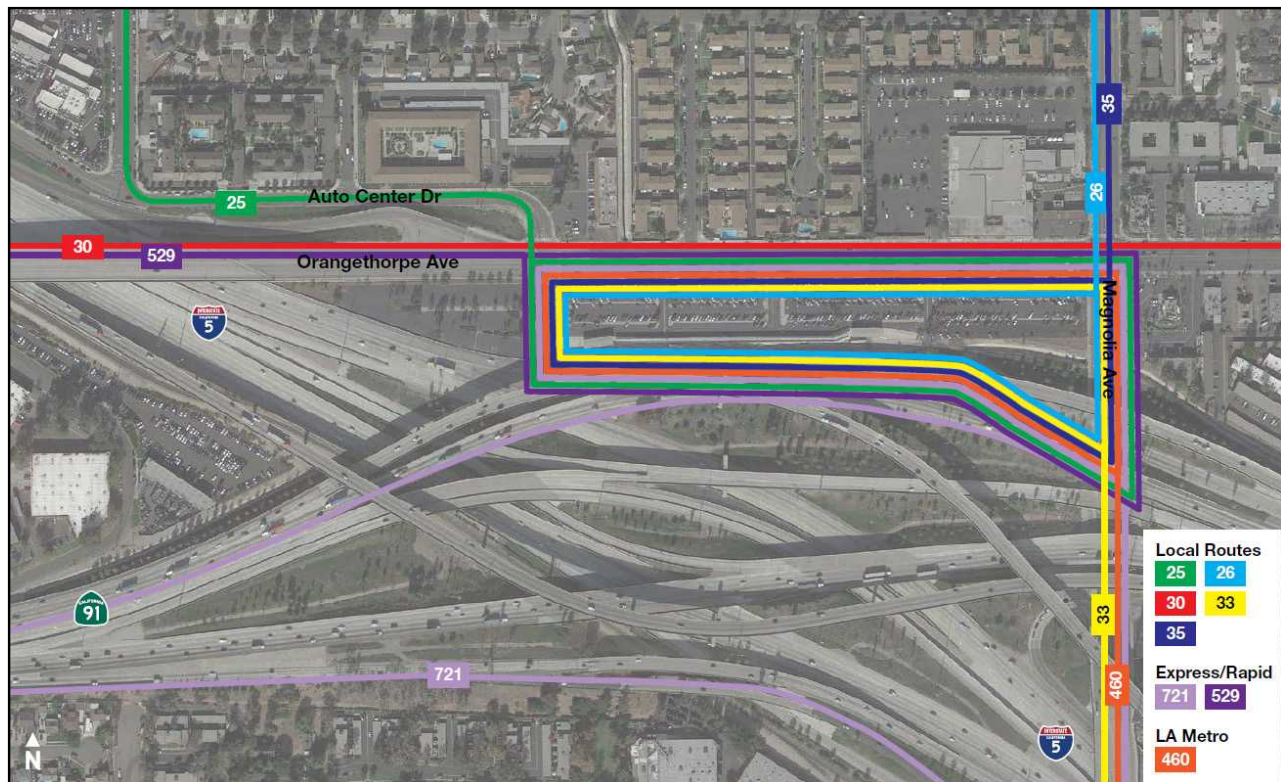


Figure 2.3. Fullerton Park-and-Ride Transit Network

## 2.7 EXISTING LAND USE

The area within a half-mile radius of the Fullerton Park-and-Ride site consists of mostly commercial, multi-family residential, single family residential, and public facilities uses. Figure 2.4. illustrates the various land uses within a half-mile radius of the Fullerton Park-and-Ride site as set forth by the City of Fullerton Zoning Code. Please refer to the appendix section 7.1 for more details.

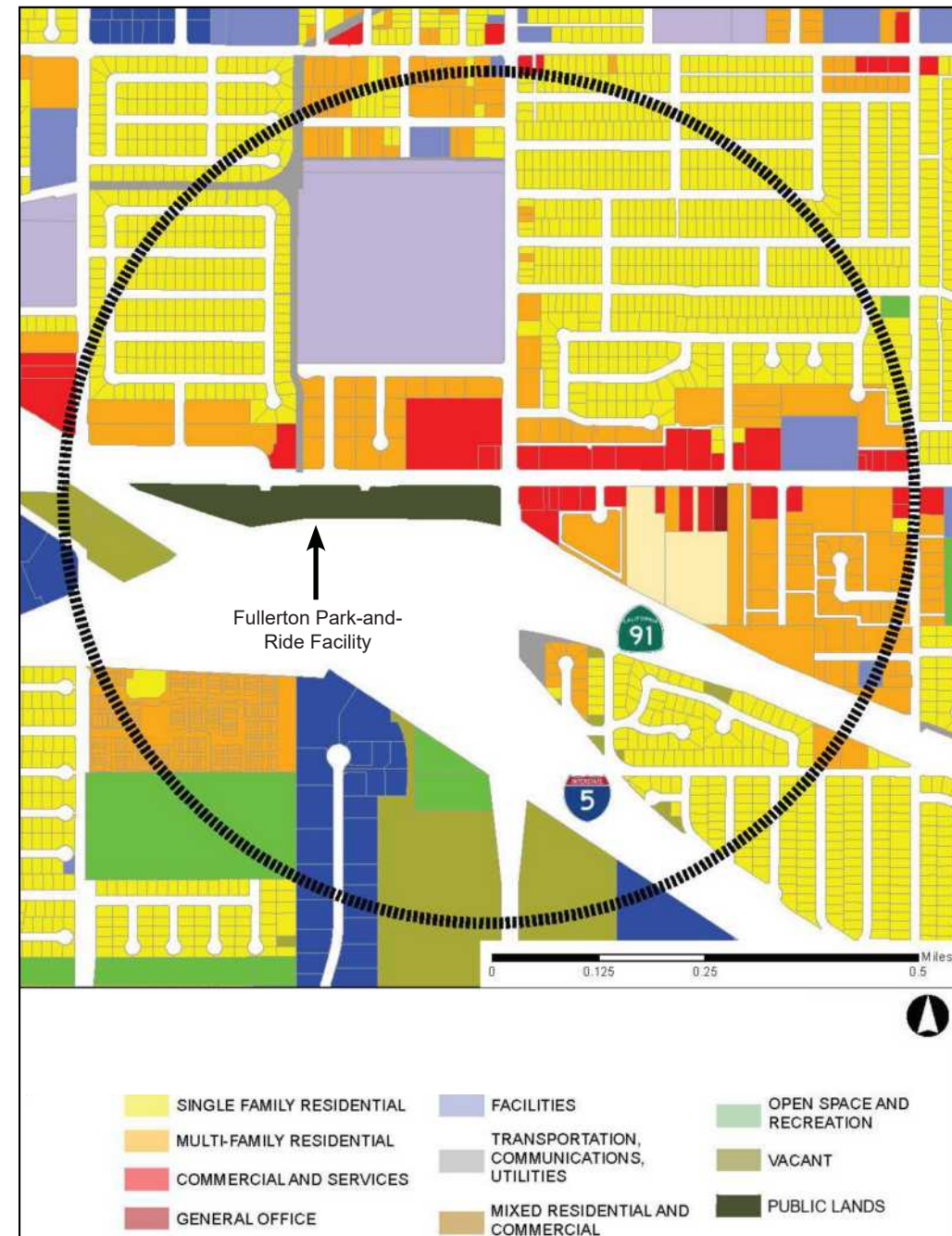


Figure 2.4. Fullerton Park-and-Ride Adjacent Land Use

## 2.8 PARKING OCCUPANCY

The survey reported peak parking demand occurred from 8:00 AM to 11:00 AM with an occupancy rate of approximately 46%, as illustrated in Table 2.1.

## 2.9 SITE ACCESS MODE SPLIT

An evaluation of the AM peak period shows a majority of users, approximately 54%, drove and parked at the Fullerton Park-and-Ride site before riding transit. In contrast, during the PM peak period, a majority of users, approximately 57%, were dropped off at the Fullerton Park-and-Ride site, as illustrated in Figure 2.5. and Figure. 2.6.

TIME	09/19/2018 SURVEY	
	OCCUPIED SPACES	PERCENTAGE
7:00 AM	311	42%
8:00 AM	345	46%
9:00 AM	346	46%
10:00 AM	337	45%
11:00 AM	341	46%
12:00 PM	330	44%
1:00 PM	332	45%
2:00 PM	319	43%
3:00 PM	305	41%
4:00 PM	266	36%
5:00 PM	188	25%
6:00 PM	144	19%

Table 2.1. Parking Occupancy Survey

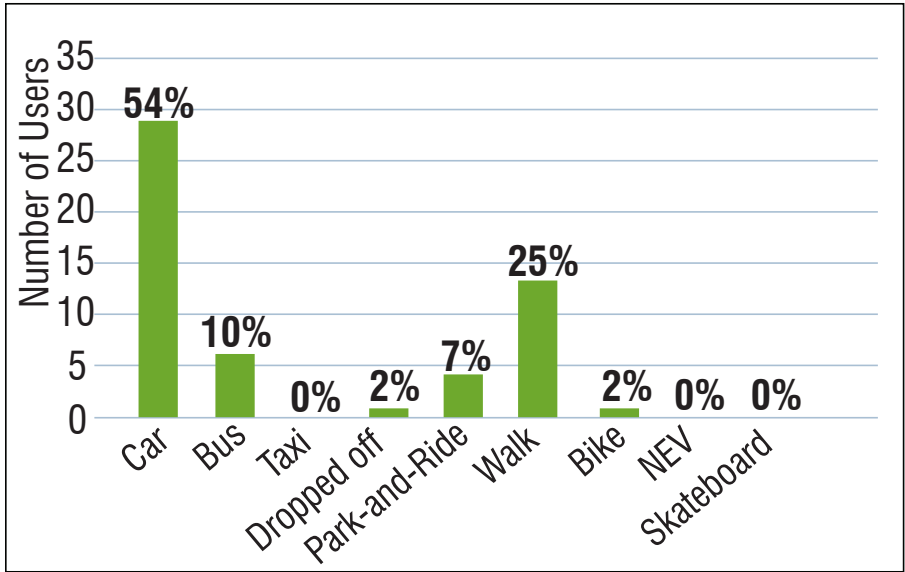


Figure 2.5. Modal Share – AM Peak

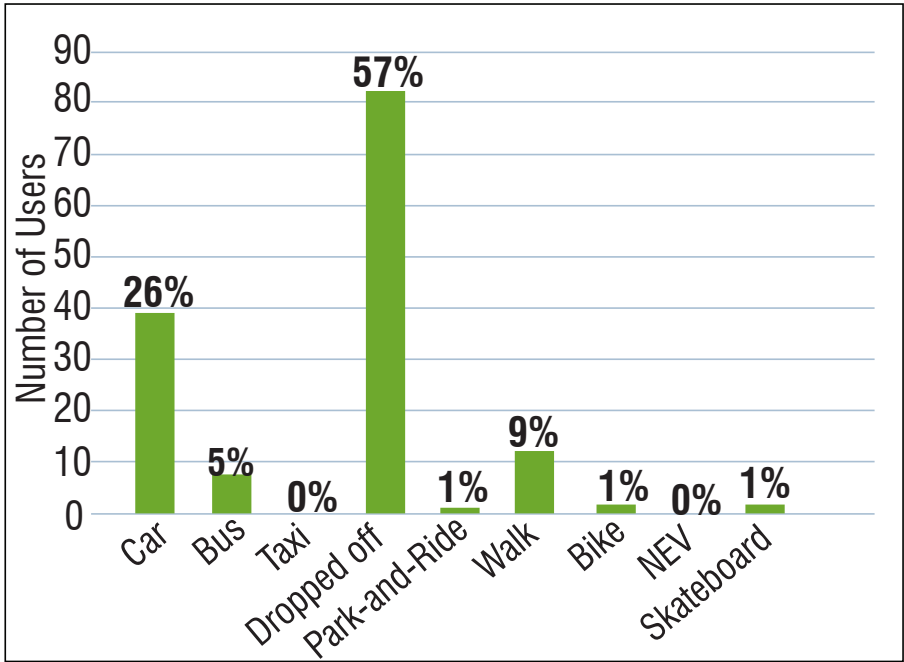


Figure 2.6. Modal Share – PM Peak



## 2.10 SITE CONSTRAINTS

- OCTA doesn't own the land around the Park-and-Ride
- Free parking encourages driving and doesn't allow for revenue capture from parking fees
- Multiple parties are not communicating their interests and needs for this site, missing joint planning opportunities
- Private transit operators function separately
- OCTA may be financially constrained to buy more land for transit parking
- The site is physically constrained by the freeway and existing development and there is no undeveloped land in the vicinity

## 2.11 SITE OPPORTUNITIES

- Excess parking supply can be redeveloped
- Community and local employer participation in the planning process
- Convert a portion of parking for a Park and Fly operation
- 'Redesign Fullerton Park-and-Ride to better serve future bus operation
- Adjust parking to meet current and future needs while promoting flexibility in design
- Explore the potential of revenue capture opportunities
- Formalize shared use agreements with various transit operators
- Improve the environment and public health with more opportunities to walk and bicycle
- Integrate facilities, amenities, and signage for all users into redevelopment plans



Figure 2.7. Axonometric view of the site

Data Source: Google Earth



## 2.12 STUDY AREA



Figure 2.8. Site, looking east from the existing facilities



Figure 2.9. Site, looking east from Magnolia Avenue



Figure 2.10. Site, looking east from Orangethorpe Avenue



Figure 2.11. Site, looking north east from Orangethorpe Avenue





Figure 2.12. North view from site, looking across Orangethorpe Avenue



Figure 2.13. Site, looking north west from existing facilities



Figure 2.14. Existing Facilities



Figure 2.15. Site, looking north east from existing facilities

# 03 CONCEPTS

## 3.1 CONCEPTS

Concepts were initially crafted and then narrowed to the final seven presented in this section of the report. These seven concepts:

- Evaluate market-rate and affordable/supportive housing types
- Reflect City and local developer input
- Create a range of configurations by creating districts which can be interchanged, phased, and adjusted to allow versatility for potential future development partners
- Encourage a mixture of uses (retail, residential, offices, affordable housing, supportive services) which not only complements the neighborhood built scale but also reflect the market study
- Allow for phased, efficient development that can be adjusted according to the market demand
- Provide accessible open spaces along the site for short term programming for the community
- Encourage a refined parking system to accommodate existing services and future development requirements



Figure 3.1. Site, looking east from existing facilities

3.2 LINEAR



Figure 3.2. Rendered view, looking west from Orangethorpe Avenue

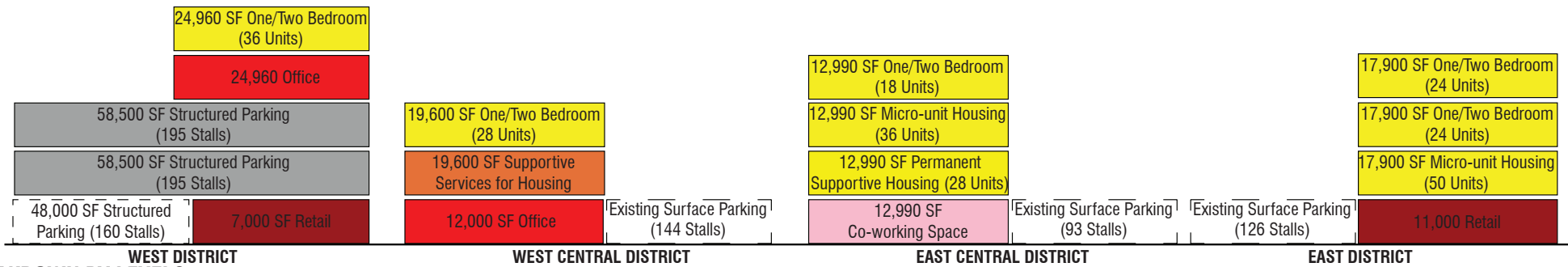
ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus circulation layout	-
CIRCULATION	Retains the existing bus parking (10 bus pads)	-
COMMUNITY	Addresses the goal of community by satisfying demands of affordable housing and supportive services	Lack of proper transition between areas with different types of land uses
DEVELOPMENT DENSITY	Consistent with the market study demand analysis	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires shared land-uses between districts to meet +/- 150 unit requirement
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains the existing surface parking	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.1. Strength and Weakness Analysis

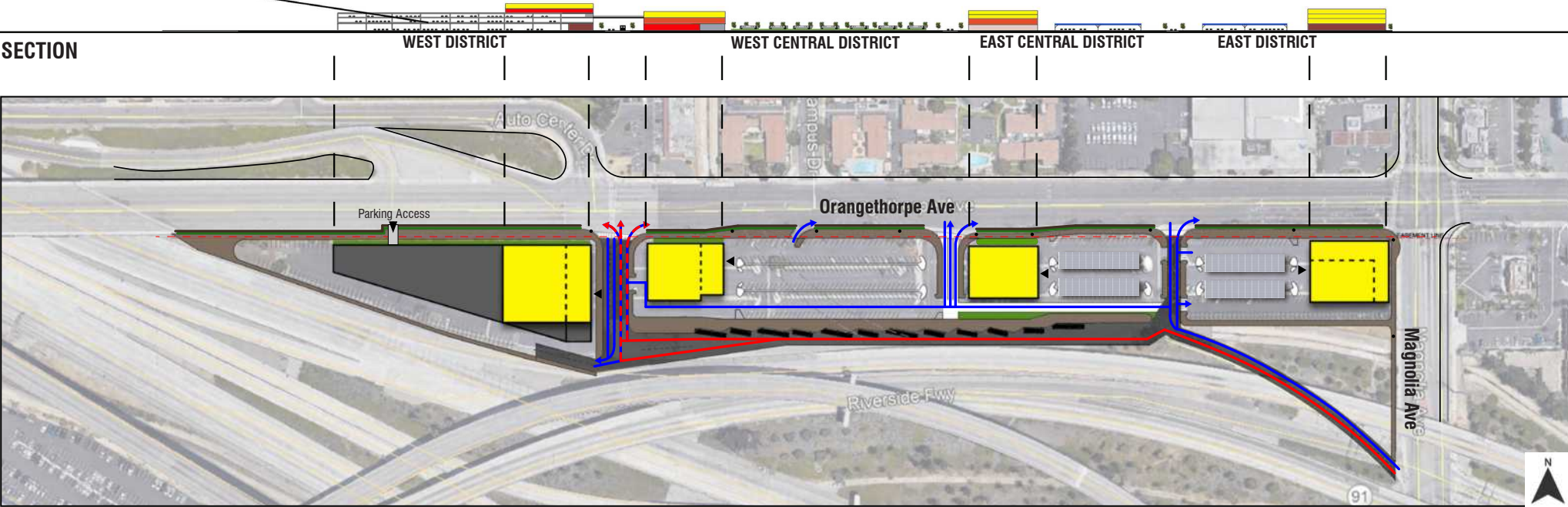


Required	+/- (37-44) Stalls	31 Stalls	71 Stalls	OCTA 265 Stalls	139 Stalls Available	34 Stalls	56 Stalls	+/- (28-34) Stalls	OCTA 144 Stalls	+/- (48-55) Stalls	39 Stalls	+/- (129-84) Stalls	49	
Provided	550 Stalls					124 Stalls Required	144 Stalls			93 Stalls	7 Stalls Required			126

PARKING ALLOCATION



BREAKDOWN BY LEVELS



PLAN (linear)

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail
- Co-working Space
- Supportive Services for Housing

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	93,350	700	130	160
Micro-unit	30,890	350	88	44
Permanent Supportive Housing	12,990	450	28	14
Supportive Services for Housing	32,590			93
General & Community Retail	18,000	-	-	79
Co-working Space	12,990	-	-	37
Office	36,960	-	-	105
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	497
Total Stalls Required	-	-	-	906
Total Stalls Provided	-	-	-	913

Not To Scale



### 3.2.1 PROFORMA (LINEAR OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>							
Annual Net Operating Income	\$1,909,309	\$720,762	\$0	\$1,284,449	\$393,984		
Desired Yield on Cost*	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$34,714,716	\$13,104,756	\$0	\$17,125,992	\$5,253,120		
Net Building Value per Unit/Building SF	<b>\$267,036</b>	<b>\$152,381</b>	<b>\$0</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>							
Total Development Costs	\$29,672,994	\$10,715,940	\$4,176,533	\$15,829,024	\$3,509,818	\$16,153,800	\$1,831,200
TDC per Residential Unit/Commercial SF/Stall	<b>\$228,254</b>	<b>\$124,604</b>	<b>\$149,162</b>	<b>\$227.59</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>							
Supportable Residual Land Value	<b>\$5,041,722</b>	<b>\$2,388,816</b>	<b>\$0</b>	<b>\$1,296,968</b>	<b>\$1,743,302</b>	<b>-\$16,153,800</b>	<b>-\$1,831,200</b>
Land Value per Unit or Bldg SF	\$38,782	\$27,777	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				PRIVATE	<b>\$10,470,808</b>	PARKING	<b>-\$17,985,000</b>
Starting Annual Ground Lease at 6% of Value					\$628,248		
Annual Debt Service on Parking Costs**							-\$1,169,950
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***							38
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$1,958,727</b>

Table 3.2. Proforma Summary (Linear Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

## ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 550 structured parking spaces and 363 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



*Figure 3.3. Rendered view of the proposed bus parking*

### 3.3 LAYERED



Figure 3.4. Built form context

ELEMENT	STRENGTHS	WEAKNESSES
<b>BUS OPERATIONS</b>	14 bus pads with a layered parking layout	Requires a disruption to existing bus service to change operational configuration
<b>CIRCULATION</b>	Centralizes bus operations thereby reducing the walking distances from parking areas.	Disrupts the existing bus layout
<b>COMMUNITY</b>	Addresses the goal of community by satisfying demands of affordable housing and supportive services	-
<b>DEVELOPMENT DENSITY</b>	High-density development allowing for more residents and employees thereby increasing transit ridership	-
<b>ECONOMICS</b>	-	Requires structured parking for full buildout
<b>PARK-AND-RIDE</b>	-	Requires a parking structure to support the density
<b>PARKING</b>	Parking structure wrapped with active uses. Distinct parking areas defined by uses	-
<b>PUBLIC SPACE</b>	Increased open space opportunities	Core of activity missing around the bus parking

Table 3.3. Strength and Weakness Analysis

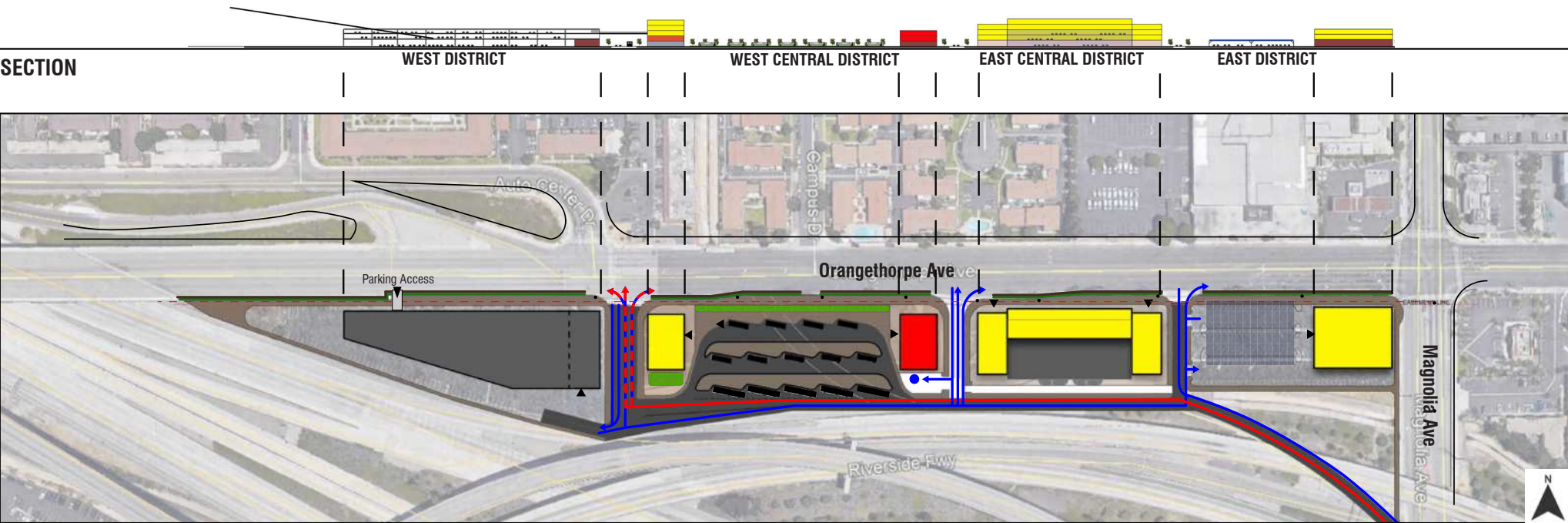


Required	+/- (15-18) Stalls	66 Stalls	41 Stalls	OCTA 409 Stalls	20 Stalls	+/- (164-188) Stalls	53 Stalls	4 Stalls Available	+/- (46-59) Stalls	77 Stalls
Provided	550 Stalls				4 Stalls Required	241 Stalls		140 Stalls		

PARKING ALLOCATION

				26,600 SF One/Two Bedroom (38 Units)												
				26,600 SF One/Two Bedroom (38 Units)												
58,500 SF Structured Parking (195 Stalls)		7,200 SF Permanent Supp- ortive Housing (16 Units)		7,200 Office							26,600 SF One/Two Bedroom (38 Units)		26,400 SF Structured Parking (88 stalls)		17,370 SF One/Two BeDroom (50 Units)	
58,500 SF Structured Parking (195 Stalls)		7,200 SF Micro unit Housing (20 Units)		7,200 Office							26,600 SF One/Two Bedroom (38 Units)		26,400 SF Structured Parking (88 stalls)		17,370 SF One/Two Bedroom (50 Units)	
48,000 SF Structured Parking (160 Stalls)		7,600 SF Retail		7,200 SF Supportive Services for Housing		7,200 Retail		18,290 SF Co-working Space		19,500 SF Structured Parking (65 stalls)		Existing Surface Parking (126 Stalls)		17,370 Retail		
WEST DISTRICT				WEST CENTRAL DISTRICT				EAST CENTRAL DISTRICT				EAST DISTRICT				

BREAKDOWN BY LEVELS



PLAN (layered)		Summary					Area (SF)		Area/Unit or Stall (SF)		Units	Stalls
		One/Two Bedroom Unit		141,140		700		200		246		
		Micro-unit		7,200		350		20		10		
		Permanent Supportive Housing		7,200		450		16		8		
		Supportive Services for Housing		7,200						20		
		General & Community Retail		32,170		-		-		142		
		Co-working Space		18,290		-		-		52		
		Office		14,400		-		-		41		
		OCTA Stalls Required		-		-		-		409		
		Non OCTA Stalls Required		-		300		-		519		
		Total Stalls Required		-		-		-		928		
		Total Stalls Provided		-		-		-		931		

### 3.3.1 PROFORMA (LAYERED OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>							
Annual Net Operating Income	\$2,919,925	\$170,932	\$0	\$736,689	\$704,137		
Desired Yield on Cost*	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$53,089,554	\$3,107,847	\$0	\$9,822,514	\$9,388,493		
Net Building Value per Unit/Building SF	<b>\$265,448</b>	<b>\$155,392</b>	<b>\$0</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>							
Total Development Costs	\$45,379,200	\$2,541,330	\$2,314,937	\$9,078,645	\$6,272,825	\$16,971,300	\$8,894,400
TDC per Residential Unit/Commercial SF/Stall	<b>\$226,896</b>	<b>\$127,066</b>	<b>\$144,684</b>	<b>\$227.59</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>							
Supportable Residual Land Value	<b>\$7,710,355</b>	<b>\$566,518</b>	<b>\$0</b>	<b>\$743,869</b>	<b>\$3,115,668</b>	<b>-\$16,971,300</b>	<b>-\$8,894,400</b>
Land Value per Unit or Bldg SF	\$38,552	\$28,326	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				PRIVATE	<b>\$12,136,409</b>	PARKING	<b>-\$25,865,700</b>
Starting Annual Ground Lease at 6% of Value					\$728,185		
Annual Debt Service on Parking Costs**							-\$1,682,601
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***							44
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$7,290,113</b>

Table 3.4. Proforma Summary (Layered Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.



# ASSUMPTIONS

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 791 structured parking spaces and 140 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



Figure 3.5. Rendered view of the proposed transition plaza

3.4 HORSE-SHOE I



Figure 3.6. Proposed Retail (East District)

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Compact bus parking layout	Requires a disruption to existing bus service to change operational configuration
CIRCULATION	Centralizes bus operations thereby reducing the walking distances from parking areas	Disrupts the existing bus layout
COMMUNITY	Addresses the goal of community by satisfying demands of affordable housing and supportive services	-
DEVELOPMENT DENSITY	High activity non-residential uses engage the street. Local retail adjacent to the bus parking	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires a parking structure to support the density
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	-	Requires structured parking for full buildout
PUBLIC SPACE	Increased open space opportunities around the bus plaza	Public space concentrated in west central district

Table 3.5. Strength and Weakness Analysis

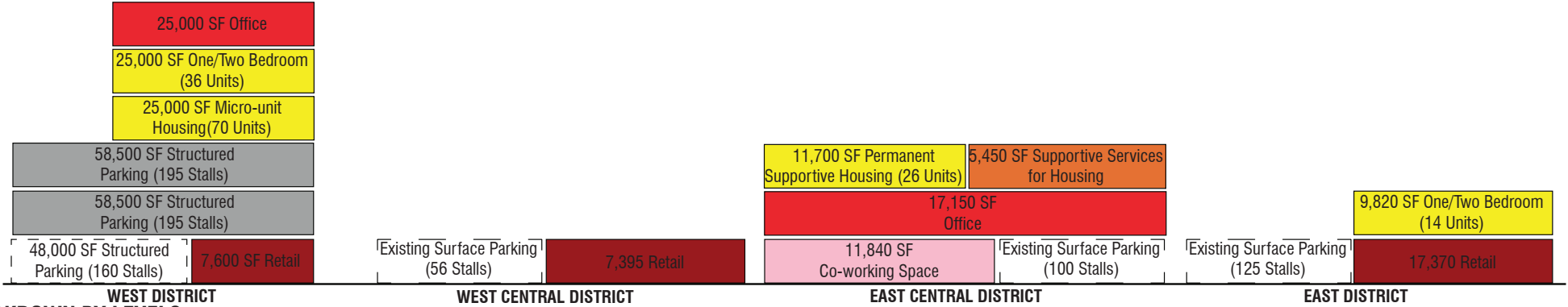
Required **+/- (67-79) Stalls** **34 Stalls** **71 Stalls** **OCTA 409 Stalls**  
 Provided **550 Stalls** **43 Stalls Required**

**33 Stalls** **23 Stalls Available**  
**56 Stalls**

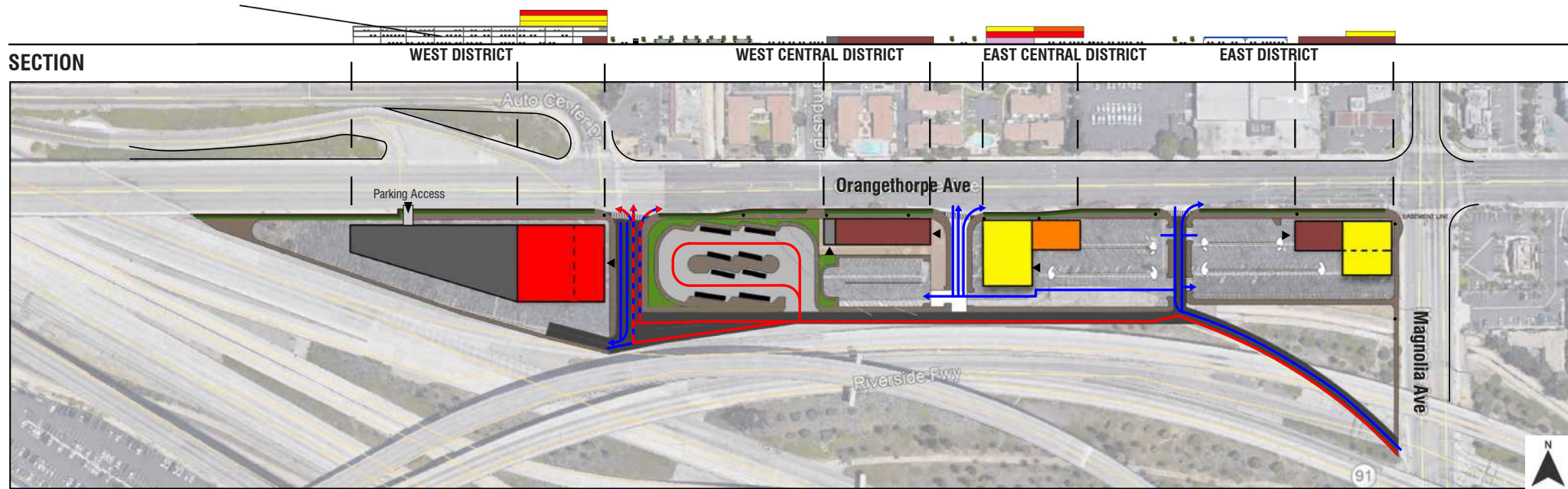
**+/- (10-13) Stalls** **34 Stalls** **49 Stalls** **15 Stalls**  
**100 Stalls** **11 Stalls Required**

**31 Stalls Available** **+/- (14-17) Stalls** **77 Stalls**  
**125 Stalls**

## PARKING ALLOCATION



## BREAKDOWN BY LEVELS



Not To Scale

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	34,820	700	50	62
Micro-unit	25,000	350	70	35
Permanent Supportive Housing	11,700	450	26	13
Supportive Services for Housing	5,450			15
General & Community Retail	32,365	-	-	143
Co-working Space	11,840	-	-	34
Office	42,150	-	-	120
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	421
Total Stalls Required	-	-	-	830
Total Stalls Provided	-	-	-	831



### 3.4.1 PROFORMA (HORSESHOE I OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>							
Annual Net Operating Income	\$720,361	\$593,513	\$0	\$1,097,738	\$708,405		
Desired Yield on Cost*	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$13,097,480	\$10,791,136	\$0	\$14,636,506	\$9,445,402		
Net Building Value per Unit/Building SF	<b>\$261,950</b>	<b>\$154,159</b>	<b>\$0</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>							
Total Development Costs	\$11,195,294	\$8,824,062	\$3,761,773	\$13,528,068	\$6,310,848	\$13,766,700	\$4,218,300
TDC per Residential Unit/Commercial SF/Stall	<b>\$223,906</b>	<b>\$126,058</b>	<b>\$144,684</b>	<b>\$227.59</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>							
Supportable Residual Land Value	<b>\$1,902,186</b>	<b>\$1,967,075</b>	<b>\$0</b>	<b>\$1,108,437</b>	<b>\$3,134,554</b>	<b>-\$13,766,700</b>	<b>-\$4,218,300</b>
Land Value per Unit or Bldg SF	\$38,044	\$28,101	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				<b>PRIVATE</b>	<b>\$8,112,252</b>	<b>PARKING</b>	<b>-\$17,985,000</b>
Starting Annual Ground Lease at 6% of Value					\$486,735		
Annual Debt Service on Parking Costs**							-\$1,169,950
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***							46
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$5,568,655</b>

Table 3.6. Proforma Summary (Horseshoe 1 Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

# ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 550 structured parking spaces and 281 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



*Figure 3.7. Rendered view of the proposed transition plaza along Orangethorpe Ave*



3.5 HORSE-SHOE II



Figure 3.8. View of the proposed retail and surface parking with carports from Orangethorpe Avenue

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Compact bus parking layout	Requires a disruption to existing bus service to change operational configuration
CIRCULATION	Centralizes bus operations thereby reducing the walking distances from parking areas	-
COMMUNITY	Addresses the goal of community by satisfying demands of affordable housing and supportive services	-
DEVELOPMENT DENSITY	High activity non-residential uses engage the street	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Doesn't meet the requirement of +/- 150 units/district
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains some of the existing parking layout	Requires structured parking for full buildout
PUBLIC SPACE	Consolidated open space around the bus operations	-

Table 3.7. Strength and Weakness Analysis

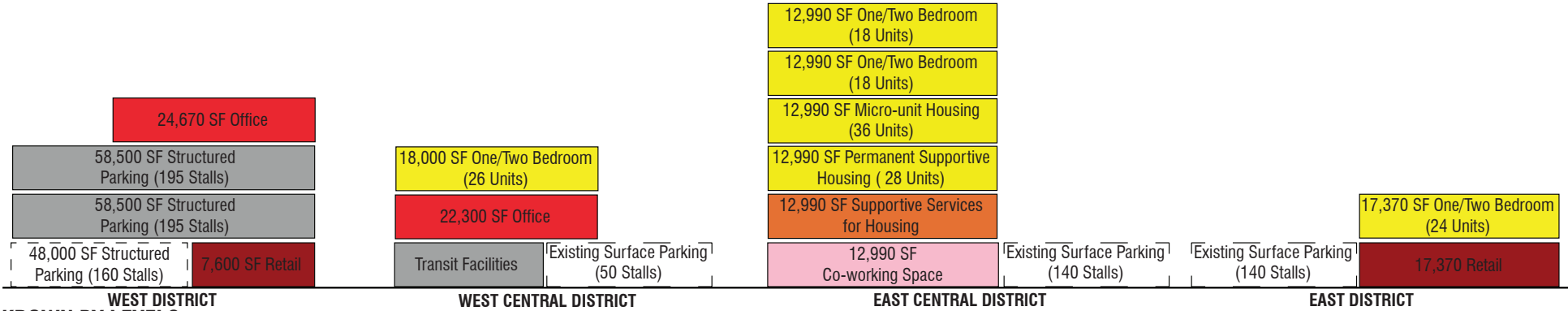
Required 34 Stalls 70 Stalls OCTA 409 Stalls 37 Stalls Available  
 Provided 550 Stalls

63 Stalls +/- (27-32) Stalls  
 45 Stalls Required 50 Stalls

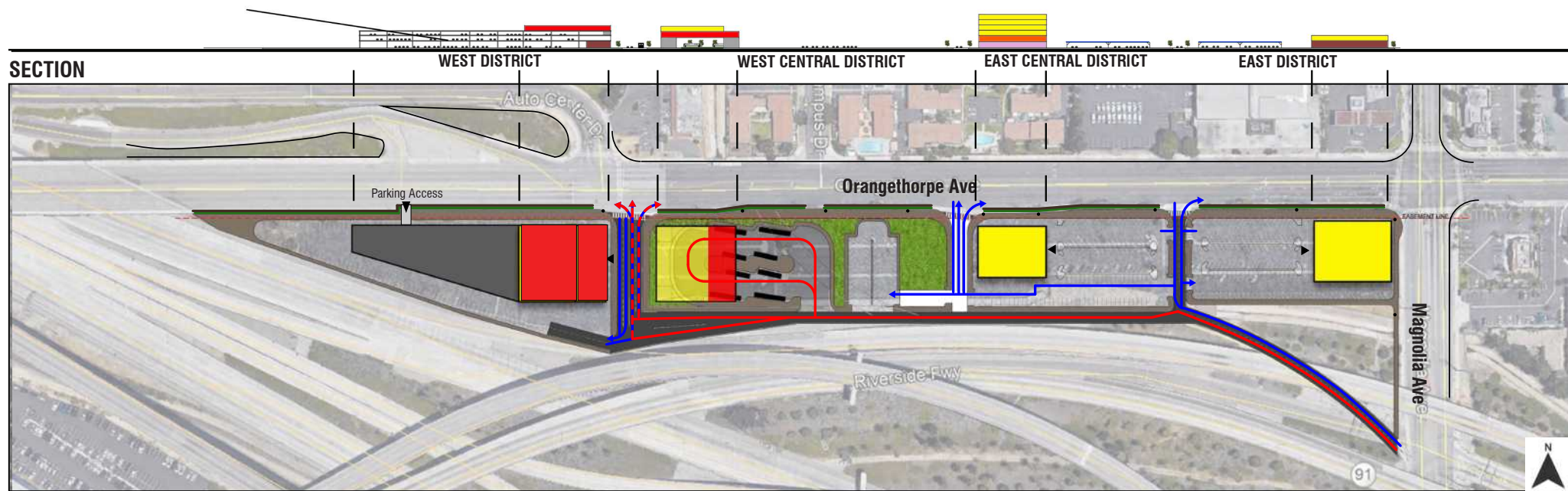
+/- (67-79) Stalls 37 Stalls 37 Stalls  
 140 Stalls 12 Stalls Required

32 Stalls Available +/- (26-31) Stalls 77 Stalls  
 140 Stalls

## PARKING ALLOCATION



## BREAKDOWN BY LEVELS



## PLAN (Horseshoe II)

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail
- Co-working Space
- Supportive Services for Housing

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	46,970	700	82	108
Micro-unit	12,990	350	36	19
Permanent Supportive Housing	12,990	450	28	14
Supportive Services for Housing	12,990			37
General & Community Retail	24,970	-	-	143
Co-working Space	12,990	-	-	37
Office	46,970	-	-	133
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	458
Total Stalls Required	-	-	-	867
Total Stalls Provided	-	-	-	880

Not To Scale

3.6 DEVELOPER I



Figure 3.9. Rendered view of the existing bus parking from Orangethorpe Avenue

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus operations layout	-
CIRCULATION	Retained the existing bus parking (10 bus pads)	-
COMMUNITY	-	Lacks gathering spaces for the community
DEVELOPMENT DENSITY	Consistent with the market demand for the market study (+/-150 Units/district)	-
ECONOMICS	Meets the requirement of +/-150 units/district	Requires structured parking for full buildout
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains some of the existing parking layout	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.8. Strength and Weakness Analysis



Required	+/- (131-151) Stalls	OCTA 9 Stalls	+/- (53-59) Stalls	OCTA 165 Stalls	71 Stalls Available	OCTA 235 Stalls	+/- (68-79) Stalls	27 Stalls	17 Stalls Available	+/- (128-145) Stalls	45 Stalls
Provided	160 Stalls		59 Stalls Required	165 Stalls		385 Stalls				209 Stalls	

PARKING ALLOCATION


### 3.6.1 PROFORMA (DEVELOPER I OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use			
	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>				
Annual Net Operating Income	\$5,445,121	\$527,501		
Desired Yield on Cost*	5.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$99,002,201	\$7,033,344		
Net Building Value per Unit/Building SF	\$233,496	\$292	N/A	N/A
<b>Costs</b>				
Total Development Costs	\$84,623,816	\$4,699,256	\$16,546,200	\$2,877,600
TDC per Residential Unit/Commercial SF/Stall	\$199,584	\$195	\$32,700	\$32,700
Land Value				
Supportable Residual Land Value	\$14,378,386	\$2,334,088	-\$16,546,200	-\$2,877,600
Land Value per Unit or Bldg SF	\$33,911	\$97		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>	PRIVATE	\$16,712,473	PARKING	-\$19,423,800
Starting Annual Ground Lease at 6% of Value		\$1,002,748		
Annual Debt Service on Parking Costs**				-\$1,263,546
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***				24
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>				<b>\$6,155,760</b>

Table 3.9. Proforma Summary (Developer 1 Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.



## ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 594 structured parking spaces and 325 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings."

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

## 3.6.2 ALTERNATIVES

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

Alternative I: OCTA will be funding all of the structured parking required for private uses as well as any structured spaces required to provide 409 total spaces for OCTA. For example, this diagram shows 919 total spaces, of which 325 are surface and the remaining 594 are structured. Let's consider the cost of all that structured parking (about \$19.5M as of right now), assume that OCTA is financing that over 30 years, and compare that to the ground lease a private developer may be willing to pay for the rights to develop the indicated amount of housing and commercial space. As of right now, it appears that the total "residual land value" of the development program in Developer Option 1 does not exceed the cost of the structured parking, and OCTA would not be recouping its investment through ground lease payments for 20+ years, but after that the garage would be paid off and net ground lease revenues would accrue to OCTA.

Alternative II: The alternative to this approach is that the developer would have to pay for the structured parking, at least their own, but that essentially wipes out the residual land value entirely (the land for development is worth less than the cost of the parking) plus the developer's return threshold is higher than OCTA's, and OCTA essentially would not expect to get any ground lease revenue ever.

## 3.7 DEVELOPER II



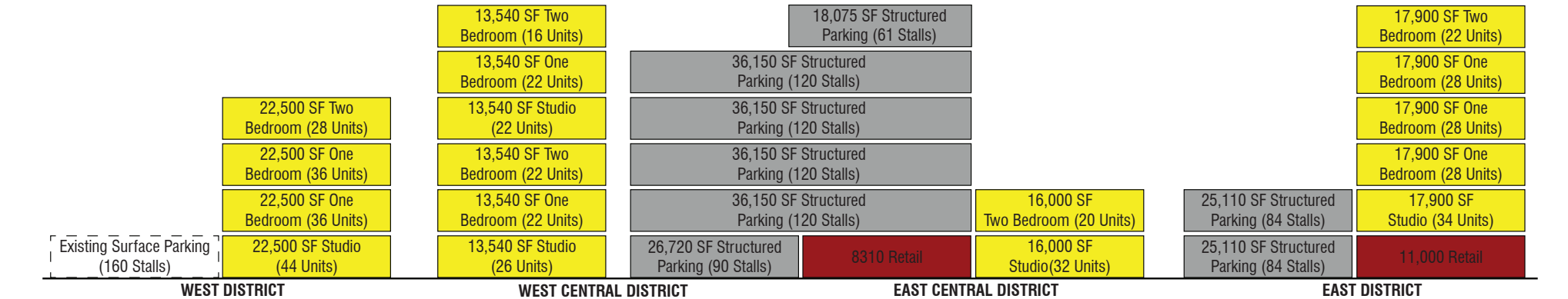
Figure 3.10 Rendered view of the transition plaza and bus parking

ELEMENT	STRENGTHS	WEAKNESSES
<b>BUS OPERATIONS</b>	14 bus pads with a layered parking layout	Requires a disruption to existing bus service to change operational configuration
<b>CIRCULATION</b>	Centralizes bus operations thereby reducing the walking distances from parking areas.	Disrupts the existing bus layout
<b>COMMUNITY</b>	Addresses the goal of community by providing gathering spaces for neighborhood uses	-
<b>DEVELOPMENT DENSITY</b>	High-density development allowing for more residents and employees thereby increasing transit ridership (+/- 150 Units/district)	-
<b>ECONOMICS</b>	Meets the requirement of +/-150 units/district	Requires structured parking for full buildout
<b>PARK-AND-RIDE</b>	-	Park-and-Ride not in close proximity to the bus plaza
<b>PARKING</b>	Parking structure wrapped with active uses	Requires structured parking for full buildout
<b>PUBLIC SPACE</b>	Increased open space opportunities around the bus plaza	Public space concentrated in west central district

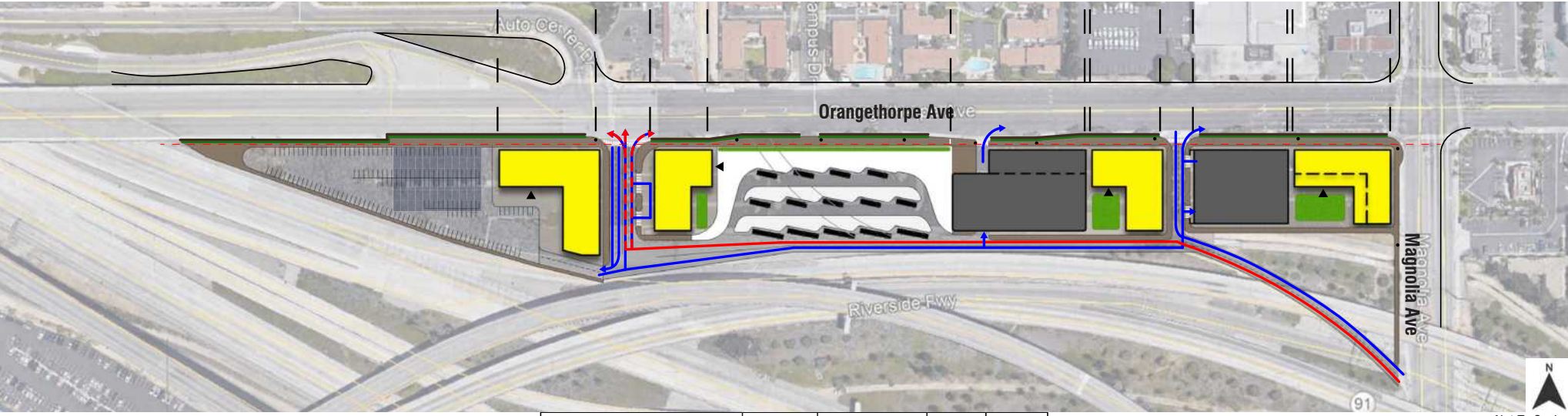
Table 3.10. Strength and Weakness Analysis

Required	+/- (129-147) Stalls	13 Stalls Available	7 Stalls Available	OCTA 409 Stalls	+/- (167-190) Stalls	25 Stalls	+/- (129-147) Stalls	33 Stalls
Provided	160 Stalls				631 Stalls		12 Stalls Required	168 Stalls

PARKING ALLOCATION



BREAKDOWN BY LEVELS



PLAN

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential
- Community retail

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
Studio Unit	69,940	500	138	104
One Bedroom Unit	152,860	600	248	248
Two Bedroom Unit	69,940	800	88	132
General & Community Retail	19,310	-	-	58
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	541
Total Stalls Required	-	-	-	950
Total Stalls Provided	-	-	-	959

### 3.7.1 PROFORMA (DEVELOPER II OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use			
	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>				
Annual Net Operating Income	\$6,056,249	\$422,657		
Desired Yield on Cost*	5.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$110,113,619	\$5,635,430		
Net Building Value per Unit/Building SF	<b>\$236,295</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>				
Total Development Costs	\$94,121,489	\$3,765,255	\$17,429,100	\$8,698,200
TDC per Residential Unit/Commercial SF/Stall	<b>\$201,977</b>	<b>\$194.99</b>	<b>\$32,700</b>	<b>\$32,700</b>
<b>Land Value</b>				
Supportable Residual Land Value	<b>\$15,992,130</b>	<b>\$1,870,176</b>	<b>-\$17,429,100</b>	<b>-\$8,698,200</b>
Land Value per Unit or Bldg SF	\$34,318	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>	PRIVATE	<b>\$17,862,306</b>	PARKING	<b>-\$26,127,300</b>
Starting Annual Ground Lease at 6% of Value		\$1,071,738		
Annual Debt Service on Parking Costs**				-\$1,699,618
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***				34
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>				<b>\$1,212,155</b>

Table 3.11. Proforma Summary (Developer 2 Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.



# ASSUMPTIONS

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 799 structured parking spaces and 160 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings."

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking



Figure 3.11 Rendered view of the proposed bus parking layout





Figure 3.12. Rendered view of the proposed bus parking layout (West Central District)



Figure 3.13. Rendered view of surface parking with proposed solar carports (East District)





Figure 3.14. Rendered view of the transition plaza from West District



Figure 3.15. Rendered view of the proposed bus parking layout from Riverside Fwy

### 3.8 PHASED OPTION

The Phased Option keeps OCTA parking requirements (409 stalls) in mind, with only a portion of the site (East District and East Central District) built with existing surface parking supporting it, as illustrated in Figure 3.16.



Figure 3.16. View of the proposed development with surface parking

ELEMENT	STRENGTHS	WEAKNESSES
BUS OPERATIONS	Retains the existing bus circulation layout	-
CIRCULATION	Retains the existing bus parking (10 bus pads)	-
COMMUNITY	-	Lack of proper transition between areas with different types of land uses
DEVELOPMENT DENSITY	Consistent with the market study demand analysis	Difficult to meet the criteria of +/- 150 Units/district
ECONOMICS	-	Requires shared land-uses between districts to meet +/- 150 unit requirement
PARK-AND-RIDE	Distinct Park-and-Ride allocated near the bus parking	-
PARKING	Retains the existing surface parking	Large, uninviting parking areas
PUBLIC SPACE	-	Core of activity missing around the bus parking

Table 3.12. Strength and Weakness Analysis (Phased Option)

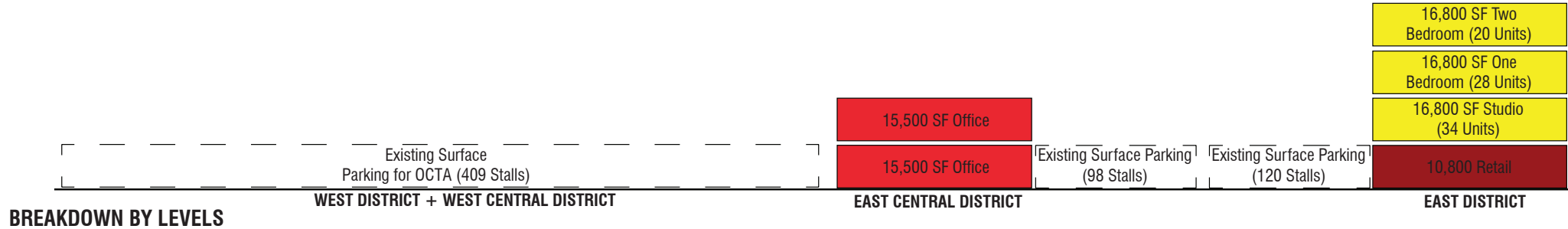


Required	409 Stalls
Provided	409 Stalls

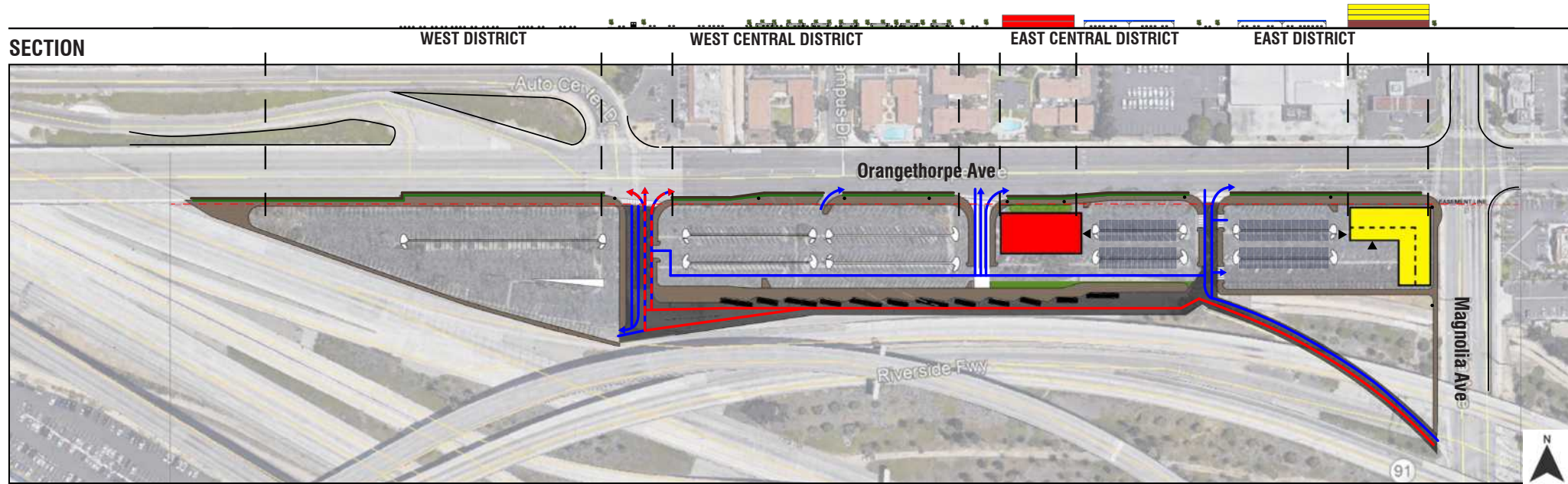
90 Stalls	8 Stalls Available
98 Stalls	

+/- (71-84) Stalls	32 Stalls
120 Stalls	

## PARKING ALLOCATION



## SECTION



## PLAN (Phased)

- Bus movements
- Auto movements
- Shared lane
- Sidewalk
- One way bike lane
- Planting strip/buffer
- Pedestrian bridge
- Building access
- Flood control easement
- Powerline pole
- Pick up / drop off zone
- Solar carports
- Structured parking
- Proposed bus park with transition plaza
- Plaza/ Event space/ Multipurpose area
- Transit facilities
- Office
- Residential

Summary	Area (SF)	Area/Unit or Stall (SF)	Units	Stalls
One/Two Bedroom Unit	33,600	700	48	67
Studio	16,800	350	34	17
Office	31,000	-	-	90
General & Community Retail	10,800	-	-	32
OCTA Stalls Required	-	-	-	409
Non OCTA Stalls Required	-	300	-	206
Total Stalls Required	-	-	-	615
Total Stalls Provided	-	-	-	627

## Summary (Phased Option)

### 3.8.1 PROFORMA (PHASED OPTION)\*

Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS

Item	Land Use				
	Apartments	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Revenues</b>					
Annual Net Operating Income	\$1,042,683	\$572,508	\$236,390		
Desired Yield on Cost*	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$18,957,868	\$7,633,440	\$3,151,872		
Net Building Value per Unit/Building SF	<b>\$231,194</b>	<b>\$246.24</b>	<b>\$291.84</b>	<b>N/A</b>	<b>N/A</b>
<b>Costs</b>					
Total Development Costs	\$16,204,560	\$7,055,352	\$2,105,891	\$0	\$0
TDC per Residential Unit/Commercial SF/Stall	<b>\$197,617</b>	<b>\$227.59</b>	<b>\$194.99</b>		
<b>Land Value</b>					
Supportable Residual Land Value	<b>\$2,753,308</b>	<b>\$578,088</b>	<b>\$1,045,981</b>	<b>\$0</b>	<b>\$0</b>
Land Value per Unit or Bldg SF	\$33,577	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>		<b>PRIVATE</b>	<b>\$4,377,377</b>	<b>PARKING</b>	<b>\$0</b>
Starting Annual Ground Lease at 6% of Value			\$262,643		
Annual Debt Service on Parking Costs**					\$0
Years of Ground Lease Payment until OCTA Parking Costs are Repaid***					0
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>					<b>\$6,699,869</b>

Table 3.13. Proforma Summary (Phased Option)

\*Based on recent property sale transactions in the area and EPS professional judgment.

\*\*Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

\*\*\*Assumes ground lease payments escalate 2% annually while debt service payment remain constant.



# ASSUMPTIONS

*Data Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018, EPS*

[1] For these calculations, the housing, office, and retail developments are assumed to utilize existing spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:

- Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.

- Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

- Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

- Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

# 04 MARKET STUDY

## 4.1 EPS MARKET STUDY FINDINGS

Data Source: EPS Market Study

LAND USE	FINDINGS	CONCLUSIONS
<b>MULTIFAMILY RESIDENTIAL (lower density)</b>	<b>High</b> market demand demonstrated by healthy rent growth and low vacancy rates.	Economically viable up to 35 units/acre
<b>AFFORDABLE HOUSING</b>	<b>High</b> market demand due to the needs of homeless populations.	Economically viable up to 35 units/acre
<b>OFFICE</b>	<b>Low</b> market demand as the site's relatively small size doesn't resonate with the new speculative Class A office development.	Dropped from further consideration
<b>HOTEL</b>	<b>Low</b> market demand due to the site's distance from major tourist destinations and employment centers.	Dropped from further consideration
<b>NON RESIDENTIAL</b>	<b>High</b> market demand due to the site's visibility from the freeways and access to transit through the Park-and-Ride.	Economically viable within retail and light industrial uses

Table 4.1. Findings from the EPS Market Study (part I)

OCTA Objective	LAND USE				
	Multifamily Residential			Nonresidential	
	35 Units/Acre	70 Units/Acre	120 Units/Acre	Retail	Light Industrial
Potential Land Value to OCTA	High	Low	Low	Medium	High
Potential OCTA Ridership Gains	Medium	High	High	Low	Low
Mixed-Use & Pedestrian-Friendly	High	High	High	Medium	Low
Provides Community Amenity	Medium	Medium	Medium	Medium	Low
Compatible with Park & Ride	High	High	High	Medium	Low

Table 4.2. Findings from the EPS Market Study (part II)

## 4.2 SUMMARY

*Data Source: EPS Market Study*

1. The market position of the Fullerton Park-and-Ride is strengthened by its strong accessibility and visibility due to its transit service and adjacency to the region's freeway system (the I-5 / SR-91 interchange), as well as frontage on significant surface streets.

2. Residential development appears to be in demand at and around the OCTA site, given regional and local growth patterns, and can yield strong benefits to OCTA in terms of transit ridership. However, local market-rate rents are modest compared to some other areas, which will affect the financial feasibility of new housing, particularly at higher densities that cost more to construct (due to structured parking, life safety requirements, etc.).

3. Office development does not appear to be in high demand in the vicinity of the OCTA property, and is not recommended as a prioritized land use.

4. Hotel use is also not recommended as a prioritized use, as the local area commands relatively low room rates and the site is not competitive in terms of convenience with the many other hotels serving tourist destinations in the vicinity.

5. Retail development does appear to be in demand, given the site's strong accessibility and visibility, and should be considered a viable use as a stand-alone development or as part of a mixed-use development.

6. Light industrial development is also in demand, though such use may not be optimally compatible with the typical ridership and placemaking goals of transit-oriented development.

7. The OCTA site could also be an appropriate location for affordable housing or various housing solutions meant to serve the County's homeless population, but would not be expected to generate significant land revenues for OCTA.

8. A financial analysis was prepared that compares the value of potential market-supported developments to their construction costs, and yields "residual land values" estimating what OCTA might expect to receive for the sale or lease of the property. This analysis indicated that lower-density multifamily may yield the highest land values, followed by light industrial uses. Higher-density housing with structured parking appears to have feasibility challenges in the near term, as this development type has higher construction costs while the value of the units does not increase proportionately.

9. As market conditions evolve, developers may be more optimistic about higher density housing or other uses than this analysis suggests. It is recommended that OCTA be realistic in its expectations regarding financial returns from the land itself, but also aspirational about the long-term use of the property. A developer solicitation process that encourages creativity to meet a variety of objectives, rather than simply maximizing land value, may yield very positive results for OCTA and the local community.

10. When considering the potential disposition of its property at the Fullerton Park-and-Ride, OCTA should account for a variety of factors including transit ridership impacts, placemaking and community compatibility, and local and regional needs in addition to maximizing revenue from the land disposition. Table 4.3 below characterizes how each land use tested for the Site addresses a variety of OCTA goals.



## 4.3 PROFORMAS FINDINGS\*

Data Source: EPS

	Item	Office	Retail	Private Structured Parking	OCTA Structured Parking
Linear Option	SUM OF TOTAL PROGRAM LAND VALUES	PRIVATE	\$10,470,808	PARKING	-\$17,985,000
	Annual Debt Service on Parking Costs [5]				-\$1,169,950
	Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				38
	NPV of OCTA Revenues over 50 Years at 5% Discount Rate				<b>-\$1,958,727</b>
Layered Option	SUM OF TOTAL PROGRAM LAND VALUES	PRIVATE	\$12,136,409	PARKING	-\$25,865,700
	Annual Debt Service on Parking Costs [5]				-\$1,682,601
	Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				77
	NPV of OCTA Revenues over 50 Years at 5% Discount Rate				<b>-\$7,290,113</b>
Horseshoe I Option	SUM OF TOTAL PROGRAM LAND VALUES	PRIVATE	\$8,112,252	PARKING	-\$17,985,000
	Annual Debt Service on Parking Costs [5]				-\$1,169,950
	Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				46
	NPV of OCTA Revenues over 50 Years at 5% Discount Rate				<b>-\$5,568,655</b>
	Item	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
Developer I Option	SUM OF TOTAL PROGRAM LAND VALUES	PRIVATE	\$16,712,473	PARKING	-\$19,423,800
	Annual Debt Service on Parking Costs [5]				-\$1,263,546
	Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				24
	NPV of OCTA Revenues over 50 Years at 5% Discount Rate				<b>\$6,155,760</b>
Developer II Option	SUM OF TOTAL PROGRAM LAND VALUES	PRIVATE	\$17,862,306	PARKING	-\$26,127,300
	Annual Debt Service on Parking Costs [5]				-\$1,699,618
	Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				34
	NPV of OCTA Revenues over 50 Years at 5% Discount Rate				<b>\$1,212,155</b>
	Item	Office	Retail	Private Structured Parking	OCTA Structured Parking
Phased Option	SUM OF TOTAL PROGRAM LAND VALUES	PRIVATE	\$4,377,377	PARKING	\$0
	Annual Debt Service on Parking Costs [5]				\$0
	Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				0
	NPV of OCTA Revenues over 50 Years at 5% Discount Rate				<b>\$6,699,869</b>

Table 4.3. Proformas Summary

\*Please refer to the appendix section 7.4 for all the proformas.

## 4.3.1 ASSUMPTIONS\*

Data Source: EPS

- All structured parking is considered a cost to the project that OCTA pays for either directly or through discounted land value. As such, the positive land values associated with private development (which are assumed to NOT have to pay their own parking development costs) are contrasted against the cost of the structured parking. In every case except the “Phased” plan that does not involve any structured parking, the aggregate cost of parking structures exceeds the value of the land for private development.
- The land value for permanent supportive housing (PSH) is assumed to be zero, as in OCTA would effectively donate the land for such development. In reality, those types of developments require significant subsidy because their income-restricted rents barely cover their operating expenses, so the entire construction cost must be subsidized. Rather than assuming OCTA provides that subsidy by actually paying the PSH developer several million dollars, it is assumed that OCTA gives the land for free but the actual development and operating cost subsidy comes from other sources.
- The amount that a developer would pay for the rights to develop the land on a ground lease is estimated at 6% of total “fee simple” land value. This ratio is pretty standard for ground leases, but is subject to negotiation and could conceivably be at least a little higher. The ground lease payments are then assumed to escalate at 2% per year over time, which again is pretty standard.
- The ground lease payments are then compared to the estimated amount that OCTA would pay in debt service on the parking structures. Those payments are assumed to be fixed rather than escalating, and the garages would be fully amortized over 30 years. In some cases, the garage costs so greatly exceed the land values that even though the ground lease revenues escalate over time, it still takes over 30 years before the nominal cumulative value of the ground leases exceeds the costs to finance the garages. Only the phased approach (which has no structured parking) and developer option 1 (which has a moderate amount of structured parking and does NOT include affordable housing) generate positive revenues to OCTA in less than 30 years.

# 05 FINDINGS AND RECOMMENDATIONS

## 5.1 FINDINGS

- Uses that appear to be feasible include\*\*:
  1. Market-rate apartments (with and without structured parking)
  2. Market-rate micro-units (with and without structured parking)
  3. Retail (with surface parking)
  4. Co-working space (with surface parking)
  5. Mixed-use housing over commercial (with structured parking)
- Uses clearly requiring subsidy include:
  1. Affordable housing
  2. Permanent supportive housing
  3. Supportive services for housing
  4. Stand-alone retail (with structured parking)
  5. Stand-alone co-working office (with structured parking)
- Cost of Structured Parking can be prohibitive.
- Market-rate residential uses seem to generate the most value.
- A phased approach to development of the site is also recommended with options for shared parking.

\*\*None of these uses appear to have enough value to contribute significantly to the costs of structured parking for transit riders, so an optimally feasible scenario would retain transit parking in a surface configuration OR identify another source of funding

## 5.2 RECOMMENDATIONS

- **Develop Joint-development policies** specific to the site. Also, maximize shared parking options with Private-Public and Private-Private Parking Agreements.
- **Coordinate with the City** to identify expectations, requirements, and potential variances for parking, etc.
- **Prepare and release a Request for Information or Request for Proposals** to identify developers interested in the site.



Figure 5.1. Fullerton Park-and-Ride site context

# 06 JOINT DEVELOPMENT POLICIES



## 6.1 POLICIES

*Data Source: MARTA'S TOD guidelines, METRO Los Angeles policies, VTA's Transit-Oriented Development program*

Case study research from Santa Clara Valley Transportation Authority (VTA) , Los Angeles County Metropolitan Transit Authority (METRO) and Metropolitan Atlanta Rapid Transit Authority (MARTA) reveal some policies adopted that OCTA should be aware of as they embark on joint development.

### FINANCIAL

- METRO: Long term ground lease, and collaborative contribution to create greater community economic benefit.
- MARTA: Retains fee ownership of joint development parcels and conveys their development rights through long-term lease rather than sale.

### PARKING

- VTA: Facilitate the creation of new TOD projects in VTA-owned land.
- MARTA: Limit parking capacity, and encourage shared parking.

### TRANSIT

- METRO: Preserve and maximize connections to transit facilities via Transit Prioritization and Integration.
- VTA: Development projects will include Physical Improvements and/or Transit Programs.

### AFFORDABLE HOUSING

- METRO: Affordable Housing Policies encourages a range of housing types, and discount joint development ground leases below the fair market value.
- MARTA: Applies a policy goal of 20% affordability, on average, to joint development projects through affordable housing policies.

# 07 APPENDICES

# 7.1.1 SITE ASSESSMENT

IBI GROUP – TECHNICAL MEMORANDUM  
FULLERTON PARK AND RIDE JOINT DEVELOPMENT STUDY SITE ASSESSMENT  
Prepared for Orange County Transportation Authority

IBI GROUP – TECHNICAL MEMORANDUM  
FULLERTON PARK AND RIDE JOINT DEVELOPMENT STUDY SITE ASSESSMENT  
Prepared for Orange County Transportation Authority

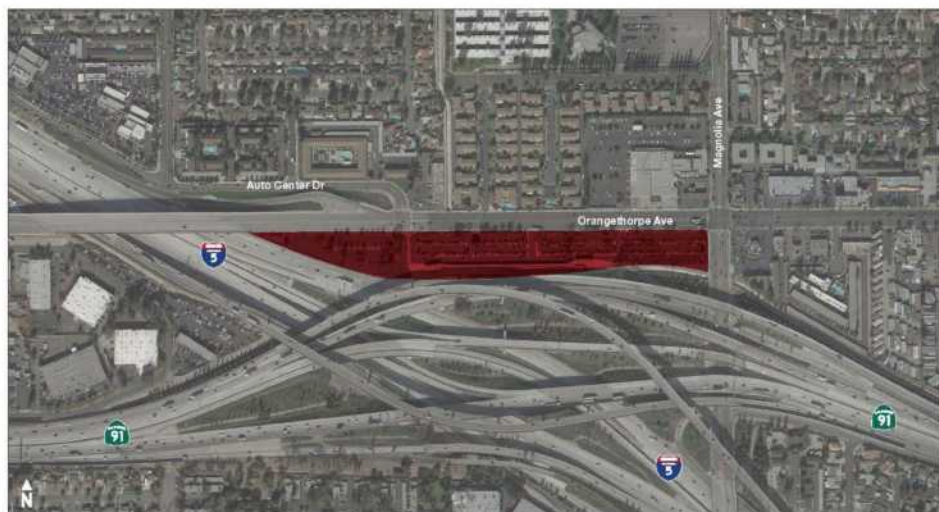
## 1 INTRODUCTION

This memorandum summarizes the results of an initial site assessment conducted for the Fullerton Park and Ride. The Fullerton Park and Ride is owned and operated by the Orange County Transportation Authority (OCTA) and is located at the southwest corner of Orangethorpe Avenue and South Magnolia Avenue in Fullerton. The purpose of the site assessment is to evaluate existing site conditions and conduct an initial qualitative and quantitative review of the project site to analyze conditions at and surrounding the site. This task identifies and discusses issues, opportunities and potential constraints to joint-development improvements at this site.

The Fullerton Park and Ride facility is located in Fullerton, California on 11.1 acres of land. The facility was constructed in two phases. Phase I in 1974 consisted of two covered 1,000 square feet bus shelters with four bus docks, waiting areas, restrooms, benches, and paved parking. Phase II in 1981 added 10 permanent bus berths, modifications to traffic flow pattern, additional parking canopies, and modifications to lighting, landscape, and irrigation systems. The facility serves as a regional transfer point for Los Angeles County Metropolitan Authority (Metro) and OCTA bus operations. The facility provides a total of 745 parking spaces, including 29 ADA spaces to park and ride customers. Figure 1.1 shows the location of the facility.

The Fullerton Park and Ride is being studied to identify the potential feasibility for joint development and improvements to the function and operations of the transit facility. This memorandum reviews existing data related to traffic volumes, mode of access, and transit boardings, as well as future conditions surrounding the site, including transportation and land use projects.

FIGURE 1.1 Fullerton Park and Ride Location



Legend  
Study Area

## 2 EXISTING NETWORK CONDITIONS

This section details the existing street conditions within the Fullerton Park and Ride study area, defined as ½ mile surrounding the facility. The existing transportation environment consists of an extensive network of arterials and local streets, bus transit services provided by OCTA, bikeways, and pedestrian pathways.

### 2.1 STREET NETWORK

**Magnolia Avenue** – Magnolia Avenue is classified as a primary arterial that travels north and south throughout the study area. The roadway is a four lane divided roadway with raised landscaped median islands. The posted speed limit is 40 miles per hour. On-street parking is not permitted along the roadway. No bikeways are currently located along Magnolia Avenue. OCTA operates local bus routes 25, 26, 33, 35, and 721 along the roadway.

**Orangethorpe Avenue** – Orangethorpe Avenue is classified as a major arterial that travels east and west throughout the study area. The roadway is currently constructed as a six lane divided roadway. The posted speed limit is 45 miles per hour. On-street parking is not permitted along the roadway. Existing Class II bikeways are located along Orangethorpe Avenue from South Vine Avenue to Basque Street. OCTA operates local bus Route 30 along the roadway.

**Gilbert Street** – Gilbert Street is a local road that travels north and south throughout the study area. It is a two lane undivided roadway. The posted speed limit is 30 miles per hour. On-street parking is permitted along a portion of the roadway.

**Auto Center Drive** – Auto Center Drive is a local road that travels north and south throughout the study area. It is a two lane undivided roadway. The posted speed limit is 25 miles per hour. On-street parking is permitted along a portion of the roadway.

The Fullerton Park and Ride is served by four access driveways. There are three access driveways located along Orangethorpe Avenue, and one access located off of Magnolia Drive on the SR-91 on-ramp.

Magnolia Avenue provides access to SR-91 and I-5 in the vicinity of the project site. Additional access to I-5 is provided via Auto Center Drive to the north.

### 2.2 BIKEWAY NETWORK

While the study area contains a network of bikeways along several arterials throughout the City, there is a lack of bikeways on the immediate surrounding streets on Orangethorpe Avenue and Magnolia Avenue. However, there is bicycle infrastructure present, as there are two standard bike racks, one at each end of the transit boarding area.

The City of Fullerton has an existing bikeway network that provides circulation and internal community links as well as access to the regional bikeway network. The City utilizes the standards developed by Caltrans to classify its bikeways and is defined as follows:

**Class I (Bike Path)**: Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flow minimized.

**Class II (Bike Lane)**: Provides a striped lane for one-way bike travel on a street or highway.

**Class III (Bike Route)**: Provides for shared use with pedestrian or motor vehicle traffic.

Figure 2.1 illustrates the existing and proposed bikeway network located within the Fullerton Park and Ride study area.

Existing bikeways/trails in the vicinity of the Fullerton Park and Ride include the following:

OCTOBER 2019

3



- Class II on-street bike lane on Orangethorpe Avenue between South Vine Avenue and Basque Avenue
- Class III bike route on Gilbert Street between Orangethorpe Avenue and Valencia Drive
- Class III bike route on Valencia Drive between Magnolia Avenue and Brookhurst Street
- Class III bike route on Brookhurst Road between Orangethorpe Avenue and Valencia Drive

The City of Fullerton adopted an updated General Plan in 2012, which included the adoption of a Bicycle Master Plan to guide bikeway planning within the city. Planned bikeways in the vicinity of the Fullerton Park and Ride are noted as the following:

- Class I bike path on Olive Avenue from Magnolia Avenue to Basque Street
- Class II on-street bike lane on Orangethorpe Avenue between Auto Center Drive and Magnolia Avenue
- Class II on-street bike lane on Valencia Drive between Gilbert Street and Brookhurst Road
- Class III bike route on Magnolia Avenue between Orangethorpe Avenue and Valencia Drive

FIGURE 2.1 Fullerton Bikeway Network



Legend  
 Class 2 Existing Bikeway

## 2.3 PEDESTRIAN NETWORK

The Fullerton Park and Ride serves as an active pedestrian zone, but the site is challenged by its immediate surroundings. The site is bounded by residential and commercial uses to the north and east. The I-5 and SR-91 freeways border the site to the south and west. Existing infrastructure, such as sidewalks, along major corridors support pedestrian activity in the area. Additionally, pedestrian crosswalks are also present at all major intersection crossings. Consideration should be given to improving wayfinding signage to assist transit patrons and visitors. Consideration should also be given to improving the lighting conditions within the area. Improved lighting conditions could help enhance pedestrian comfort and safety within the study area.

## 2.4 TRANSIT NETWORK

Seven OCTA bus routes and one LA Metro bus route serve the Fullerton Park and Ride site, as illustrated in Figure 2.2. Buses currently enter the site via the 91 West Freeway/Park and Ride entrance ramp, just south of the Park and Ride off Magnolia Street, or through the access driveways along Orangethorpe Avenue. Route 30 is the only route that does not enter the site, as it passes along Orangethorpe Avenue. Once at the Fullerton Park and Ride site, buses dock at one of fourteen existing bus bays located along the southern edge of the site. The seven OCTA bus routes and one LA Metro bus route that serve the Fullerton Park and Ride site are summarized in Table 2.1 below.

The Fullerton Park and Ride has covered bus bays for seven routes, including routes to Anaheim (including Disneyland), Buena Park (including Knott's Berry Farm), Placentia, Stanton, Westminster, Fountain Valley, Anaheim, Garden Grove, and Huntington Beach. Express bus service is offered to and from Los Angeles six times daily. In addition, OCTA recently included the Bravo! 529 rapid bus route that originates at the Fullerton Park and Ride and extends to the Goldenwest Transportation Center. The site is easily accessible from local freeways via the I-5/Magnolia interchange.

The eight bus routes that serve the Fullerton Park and Ride are described below:

**OCTA Route 25:** This route provides weekday and Saturday, Sunday, and Holiday services from Fullerton to Huntington Beach. It starts at the Fullerton Park and Ride, travels west then southerly through the cities of Buena Park and Cypress, then ends at the station of Pacific Coast Highway/1<sup>st</sup> in Huntington Beach. This route operates at approximately 55-minute headways at the Fullerton Park and Ride and provides 21 trips from this site on a daily basis.

**OCTA Route 26:** This route provides weekday and Saturday, Sunday, and Holiday services from Fullerton to Placentia. It starts at the Fullerton Park and Ride, travels west and northerly through the cities of Buena Park, Fullerton, then ends at the Rose/Yorba Linda station in Placentia. This route operates at approximately 25-minute headways at the Fullerton Park and Ride and provides 41 trips to this site on a daily basis.

**OCTA Route 30:** This route provides weekday and Saturday, Sunday, and Holiday services from Cerritos to Anaheim. It starts at the Los Cerritos Center, travels northerly through the cities of La Palma, Fullerton, and Placentia, then ends at the station of Esperanza/Fairlynn in the City of Anaheim. This route operates at approximately 30-minute headways at the Fullerton Park and Ride and provides 53 trips to this site on a daily basis.

**OCTA Route 33:** This route provides weekday and Saturday, Sunday, and Holiday services from Fullerton to Huntington Beach. It starts at the Fullerton Park and Ride, travels southerly through the cities of Stanton, Westminster, Fountain Valley, and ends at the Magnolia/Coast Highway station in Huntington Beach. This route operates at approximately 40-minute headways at the Fullerton Park and Ride and provides 23 trips to this site on a daily basis.

**OCTA Route 35:** This route provides weekday services from Fullerton to Costa Mesa. It starts at the Fullerton Park and Ride, travels easterly and southerly through the City of Anaheim, Garden Grove, Westminster, Fountain Valley, and ends at the 19<sup>th</sup>/Meyer station at in Huntington Beach. This route operates at approximately 30-minute headways at the Fullerton Park and Ride and provides 36 trips to this site on a daily basis.

**OCTA Route 721:** This route provides express weekday services from Fullerton to Los Angeles. It starts at the Fullerton Park and Ride, travels easterly and southerly to Los Angeles, and makes two stops at Flower/7<sup>th</sup> and Beaudry/5<sup>th</sup>. This route operates at approximately 30-minute headways at the Fullerton Park and Ride and provides 36 trips to this site on a daily basis. This route operates at approximately 1-hour headways during peak times at the Fullerton Park and Ride and provides 6 trips to this site on a daily basis.

**OCTA Bravo! 529 Route:** This route provides rapid weekday service from the Fullerton Park and Ride to the Golden West Transit Center in Huntington Beach. The bus travels westerly along Orangethorpe Ave, and south on Beach, making key stops at Knott's Berry Farm, Beach/Katella, and Beach/Westminster. This route provides 12 minute headways during peak hours and 18 minute headway for off-peak hours. Bravo! 529 provides 51 trips each weekday.

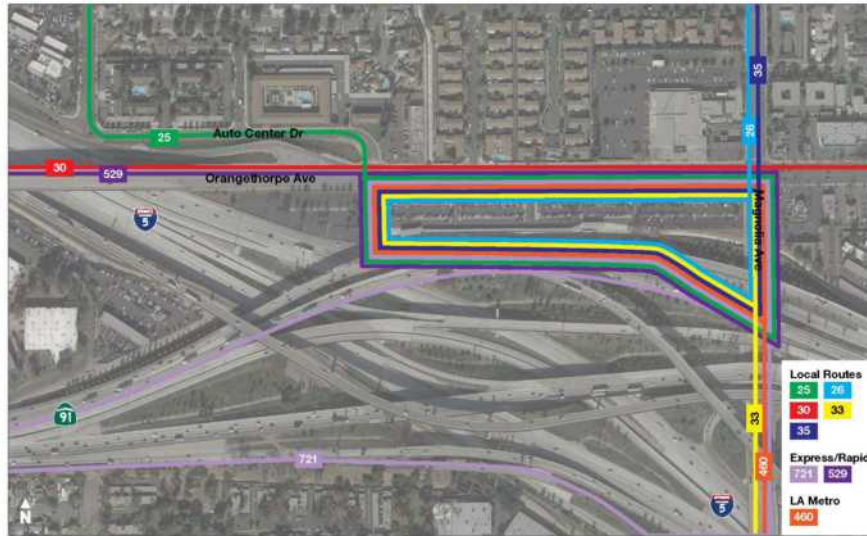
**LA Metro Route 460:** This Los Angeles Metro route provides weekday, Saturday, Sunday and holiday express services from Disneyland to Downtown Los Angeles. It starts at Disneyland, travels northerly through the cities of Fullerton and Norwalk, and ends at 6<sup>th</sup> & Los Angeles. This route operates at approximately 20-minute headways at the Fullerton Park and Ride and provides 35 trips to this site on a daily basis.

**TABLE 2.1: TRANSIT OPERATIONS**

OCTA ROUTE	STREETS	WEEKDAY PEAK HEADWAY	NUMBER OF DAILY TRIPS
25	First, Goldenwest, Knott, Artesia, Dale, Magnolia	55 minutes	21
26	Magnolia, Commonwealth, Nutwood, State College, Placentia, Bradford, Yorba Linda, Linda Vista, Rose	25 minutes	41
30	Orangethorpe, Gridley, 183rd	30 minutes	53
33	Magnolia	40 minutes	23
35	Magnolia, Commonwealth, Brookhurst, Victoria, Placentia, 19 <sup>th</sup> , Newport	30 minutes	36
721	Magnolia, SR-91, I-110, Figueroa, 4 <sup>th</sup> , 5 <sup>th</sup> , Flower	30 minutes	36
529	Orangethorpe, Beach, Center	12 minutes	51
LA Metro 460	Disneyland, I-105, I-110, Downtown Los Angeles	20 minutes	35



FIGURE 2.2 Fullerton Park and Ride Transit Network



 FULLERTON PARK AND RIDE JOINT DEVELOPMENT STUDY  
 Orange County Transportation Authority

IBI GROUP October 2019

## 3 EXISTING PARKING CONDITIONS

This section details the existing parking conditions at the Fullerton Park and Ride. It includes an assessment of existing parking supply and demand at the facility. This section also summarizes the data collection process and parking analysis methodology.

### 3.1 METHODOLOGY

Parking occupancy counts were conducted during the day at the Fullerton Park and Ride site on a weekday. The daytime parking surveys were performed between 7:00 AM and 6:00 PM to provide information on variations in parking demand between AM/PM peak hours. The parking surveys were conducted while schools were in session on:

- Wednesday, September 19, 2018

The detailed parking count survey can be found in Appendix A of this report.

### 3.2 EXISTING PARKING SUPPLY

The Fullerton Park and Ride site offers 745 off-street parking spaces in its surface parking lot. Of the 745 parking spaces, 29 parking spaces are reserved for ADA parking. Access to the parking site is not controlled and no fees are charged for parking at the site. On-street parking is not permitted on any of the streets adjacent to the Fullerton Park and Ride site.

### 3.3 EXISTING PARKING DEMAND

The following section summarizes existing parking occupancy observed on a weekday. Results of the parking occupancy survey revealed occupancy percentages of 40% to 50% for the peak hours between 7:00 AM and 6:00 PM. Table 3.1 summarizes the results of the parking occupancy survey. The numbers below reflect the number of occupied spaces and the ratio of occupancy including all spaces in the lot (both standard and ADA spaces).

**TABLE 3.1: PARKING OCCUPANCY SURVEY**

TIME	09/19/2018 SURVEY	
	OCCUPIED SPACES	PERCENTAGE
7:00 AM	311	42%
8:00 AM	345	46%
9:00 AM	346	46%
10:00 AM	337	45%
11:00 AM	341	46%
12:00 PM	330	44%
1:00 PM	332	45%
2:00 PM	319	43%
3:00 PM	305	41%
4:00 PM	266	36%
5:00 PM	188	25%
6:00 PM	144	19%

The survey reported peak parking demand occurred from 8:00 AM to 11:00 AM with an occupancy rate of approximately 46%. Parking occupancy percentages equal to or greater than 85% is typically considered to be reflective of at capacity or near capacity conditions.

There is the potential for parking demand to change in the future. The Draft OCTA 2018 Long Range Transportation Plan (LRTP) identifies two new high-quality transit projects that would serve the Fullerton Park and Ride. These two projects include a high quality transit service along Beach Boulevard project between the Fullerton Park and Ride and Downtown Huntington Beach and a Freeway BRT operating in the Interstate 5 Corridor between the Fullerton Park and Ride and Mission Viejo/Laguna Niguel Metrolink Station. If these projects are implemented, there could be a future increase in parking demand at the Fullerton Park and Ride.

## 4 EXISTING TRAFFIC CONDITIONS

This section summarizes the existing traffic conditions within the Fullerton Park and Ride area, including AM and PM peak traffic volumes for vehicles, bicyclists, and pedestrians, as well as an assessment of existing mode split for persons accessing the site.

### 4.1 METHODOLOGY

#### 4.1.1 TRAFFIC COUNT DATA

The existing intersection turning movement counts were taken on Wednesday, September 19, 2018 during the morning peak period (7:00 AM to 9:00 AM) and the afternoon peak period (4:00 PM to 6:00 PM) for vehicular, bicycle, and pedestrian traffic. The counts were conducted to capture peak weekday travel behavior when school was in session. The detailed traffic count data can be found in Appendix B of this report.

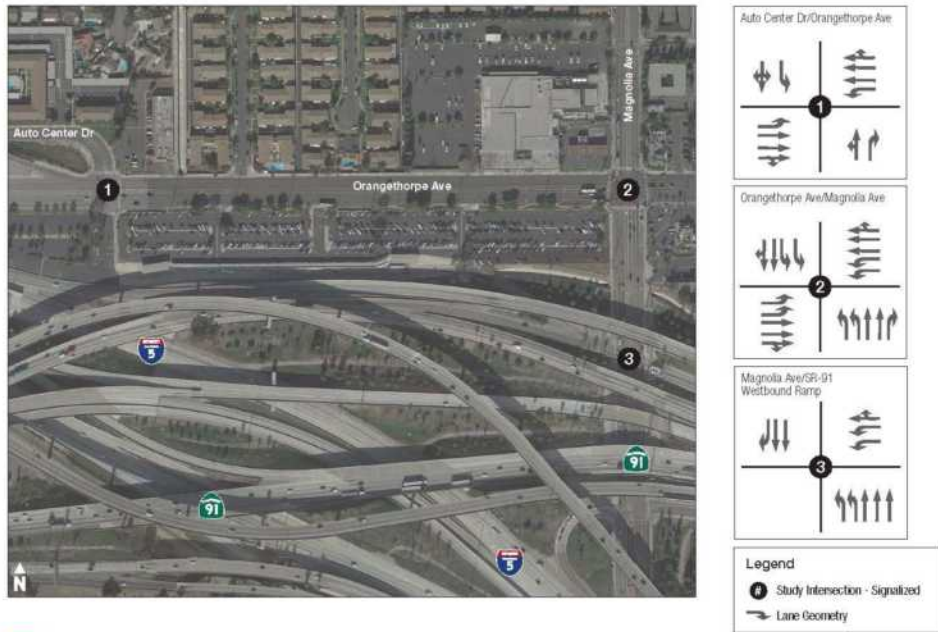
#### 4.1.2 EXISTING GEOMETRY AND CONTROL

The intersection analysis includes an assessment of 3 study intersections:

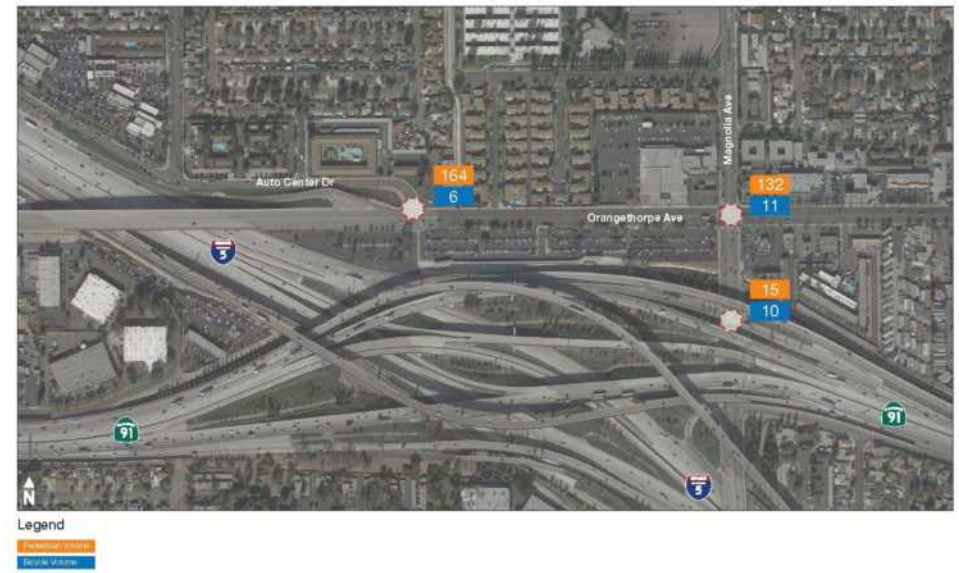
1. Auto Center Drive and Orangethorpe Avenue
2. Magnolia Avenue and Orangethorpe Avenue
3. Magnolia Avenue and SR-91 Westbound Off-Ramp

Figure 4.1 illustrates the study intersections along with the existing intersection geometry and control.

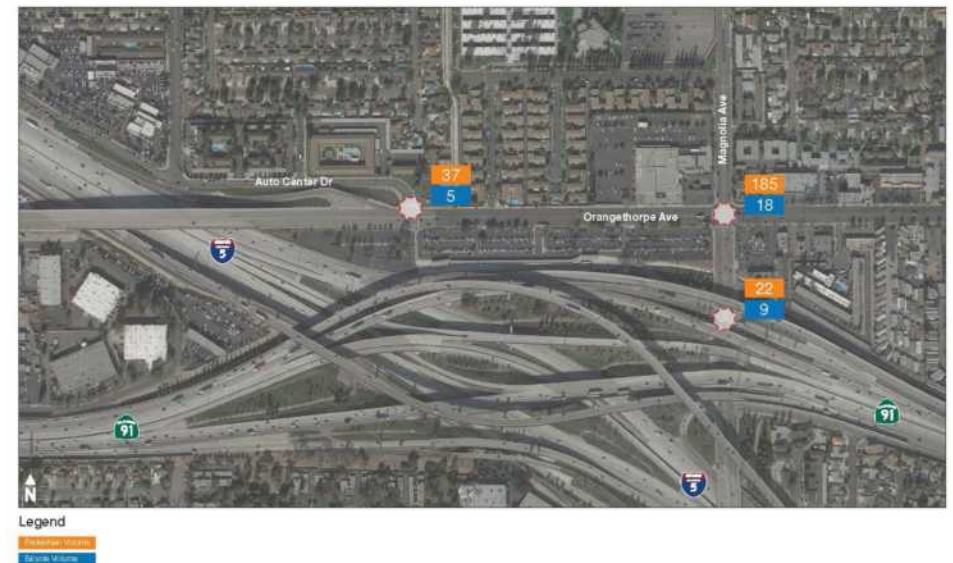
**FIGURE 4.1** Existing Intersection Geometry and Control



**FIGURE 4.4** Existing Active Transportation Volumes – AM Peak Period



**FIGURE 4.5** Existing Active Transportation Volumes – PM Peak Period





### 4.3 SITE ACCESS MODE SPLIT

In addition to AM and PM peak period traffic volume counts, a survey of arrival trip types was also conducted to evaluate the modal share of the Fullerton Park and Ride site. The survey assessed what mode of transportation visitors used to travel to the Fullerton Park and Ride site. The survey was conducted on the same weekday as the traffic volume counts, between the AM peak hours of 7:00 AM to 9:00 AM and between the PM peak hours of 4:00 PM and 6:00 PM. An evaluation of the AM peak period shows a majority of users, approximately 54%, drove and parked at the Fullerton Park and Ride site before riding transit. In contrast, during the PM peak period, a majority of users, approximately 57%, were dropped off at the Fullerton Park and Ride site. The results of the modal share evaluation are illustrated in Figures 4.6 and 4.7 below. The detailed modal share survey can be found in Appendix C of this report.

FIGURE 4.6: MODAL SHARE – AM PEAK

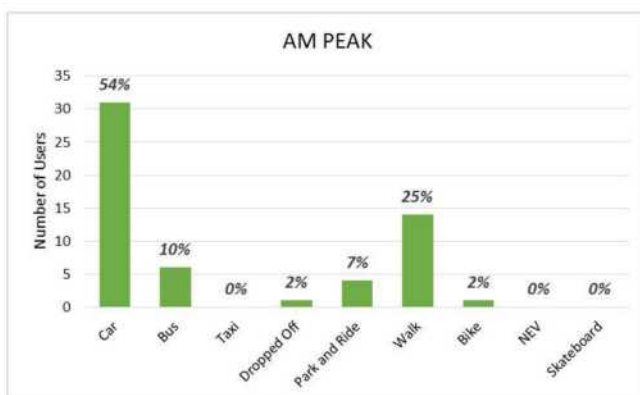
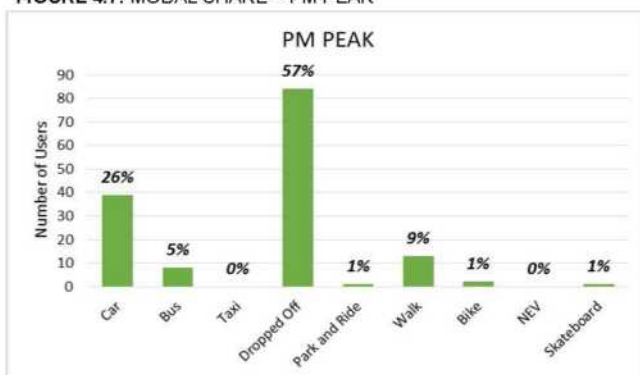


FIGURE 4.7: MODAL SHARE – PM PEAK



## 5 COLLISION HISTORY

As a part of the Fullerton Park and Ride site assessment, collision history data was also collected and evaluated. Collision data involving vehicles, bicyclists and pedestrians was collected from the Statewide Integrated Traffic Records System (SWITRS) for the five-year time ending on December 31, 2015. This section summarizes the collision history involving vehicles, bicyclists, and pedestrians within the Fullerton Park and Ride vicinity.

### 5.1 VEHICULAR COLLISION SUMMARY

As indicated by the modal share assessment, a majority of users arrive to the Fullerton Park and Ride site by driving. Upon review of the five-year SWITRS collision history data, it was noted that approximately 592 vehicular collisions occurred within a 1-mile radius of the Fullerton Park and Ride site. A majority of the reported collisions occurred on the 91 Freeway and I-5 Interchange. Figure 5.1 illustrates the locations of vehicular collisions within the vicinity of the Fullerton Park and Ride site for the five-year period from January 1, 2011 to December 31, 2015.

### 5.2 BICYCLE COLLISION SUMMARY

Upon review of the five-year SWITRS collision history data, it was noted that approximately 49 bicycle collisions occurred within a 1-mile radius of the Fullerton Park and Ride site. Figure 5.2 illustrates the locations of bicycle collisions within the vicinity of the Fullerton Park and Ride site for the five-year period ending from January 1, 2011 to December 31, 2015.

### 5.3 PEDESTRIAN COLLISION SUMMARY

Upon review of the five-year SWITRS collision history data, it was noted that approximately 43 pedestrian collisions occurred within a 1-mile radius of the Fullerton Park and Ride site. Figure 5.3 illustrates the locations of pedestrian collisions within the vicinity of the Fullerton Park and Ride site for the five-year period from January 1, 2011 to December 31, 2015.

The map displays the city of Fullerton, California, with its city boundary highlighted in orange. Key features include:

- Major Roads:** I-5 (Orange Freeway) running north-south, I-15 (San Joaquin Hills Freeway) running east-west, and various local streets such as W Main Ave, W Orange Ave, and W La Palma Ave.
- Parks:** Fuller Park (large green area in the center), Bolser Park (green area in the south), and Buena Park Downtown (orange area in the southwest).
- Transportation:** The Fullerton Municipal Airport is located in the north. The Los Angeles County Metropolitan Transportation Authority (LACMTA) station is marked with a blue dot in the southeast.
- Waterways:** Fullerton Creek is shown flowing through the city.
- City Boundary:** The orange outline defines the city limits, which include areas like Buena Park Downtown and Brookhurst Community Park.

[illegible]





## 6.2 EXISTING BICYCLE CONDITIONS

The following observations were made regarding bicycle access at the site:

- There are two bike racks, one at each shelter on the ends. There were no bicycles observed to be parked at any of the racks provided.
- The bike racks are a style manufactured widely in the 1950's that hold only a portion of the bike's front tire. These racks are named "schoolyard" racks by the Association of Pedestrian and Bicycle Professionals (APBP), and should be avoided because they do not secure the bike frame in two places, but only lock the front wheel. Front wheels can be detached from the rest of the bike when the frame is not secured.
- There are no bike lockers on the site. Bike lockers are advantageous to have when customers lock their bikes for longer periods of time.
- Bicycle connections to the park and ride from the surrounding community were found to be lacking. There are no designated bicycle lanes on streets immediately adjacent to the park and ride on Magnolia Avenue and Orangethorpe Avenue.
- Cyclists can cross under I-5 using the Magnolia Avenue; however, there are no existing bikeway facilities to support this travel.
- Wayfinding signage directing cyclists and pedestrians to the Fullerton Park and Ride, restaurants and employment centers near the transit center were absent.
- There is no internal bicycle circulation signage or striping once inside the park and ride area.
- There were no bike racks observed at other destinations in the larger planning area.



## 6.3 EXISTING PEDESTRIAN CONDITIONS

The following observations were made regarding pedestrian access at the site:

- There is an ample supply of sidewalks well connected through the site on the street frontages.
- Internal pedestrian circulation is not guided by designated pathways or signage. Striped crosswalks are present in certain, but not all locations. Pedestrians are observed walking through parking lots and crossing at mid-block locations.
- There are narrow sidewalks on the main dock, located to the north side of the bathrooms.
- The bathrooms building facilities were designed in a way that inhibit openness of pedestrian traffic and general transparency.
- There are plenty of benches and trashcans present. However, a pedestrian would have to sit at a different dock's bench if more than 4 other people are waiting for the same bus.
- There are no pamphlets for transit info in the pamphlet container.

- ADA yellow bumper strips are plentiful.
- Dock signs could be upgraded.
- The 2 ADA ramps to get onto the dock are far away from the majority of ADA parking spaces. The priority goes is to the passenger loading zone.
- Marked crosswalks are provided at multiple locations so that pedestrians can access the bus shelters using designated pathways instead of walking through the parking lot.

## 6.4 EXISTING AESTHETIC CONDITIONS

The following observations were made regarding aesthetic conditions at the site:

- The Fullerton Park and Ride has decently landscaped buffers along the Magnolia Avenue and Orangethorpe Avenue frontage. However, landscaping within the site is sporadic.
- Sidewalks are provided along the frontage of the site on both Orangethorpe Avenue and Magnolia Avenue, but narrow down at bus stations that have restricting blue colored walls.
- General street painting of the site could use a full update.
- The location of the Fullerton Park and Ride at the intersection of two major freeways and two major arterial streets creates a fairly noisy environment.
- While waiting for a bus, people face the grey wall of the 91 Freeway West/ I-5 North interchange ramp. Perhaps a mural on this wall could improve the waiting experience.
- There is light graffiti in multiple locations on the site.
- The bathroom areas on the west and east sides do not smell good.
- The site, in its entirety, is relatively clean.





## 7 CURRENT TRANSIT RIDERSHIP AND DEMAND

Current transit ridership for the Fullerton Park and Ride is calculated from boardings and alightings provided by OCTA by transit stop number within Transportation Analysis Zone (TAZ) number 127. Seven different routes (25, 26, 33, 35, 721, 527, and Metro 460) dock at the Fullerton Park and Ride, in Docks 6/7, 5, 11, 10, 8, 11, and 3/4, respectively. Route 30 travels on Orangethorpe Avenue, but does not go within the Fullerton Park and Ride Facility. There are 3 bus stops on Orangethorpe directly adjacent to the Fullerton Park and Ride, one of which is eastbound.

### 7.1 FUTURE TRANSIT RIDERSHIP

In general, transit ridership or demand for transit in a given region will parallel the overall population growth of the area. OCTA's 2018 LRTP predicts a 10% growth in population, a 11% growth in housing and a 17% increase in employment in Orange County forecast to 2040. The forecasted growth is predicted to create increased travel demand and increased congestion along already congested regional highways, local roadways, rail lines, and bus systems.

Local area ridership forecasts, such as for the routes serving the Fullerton Park and Ride and its vicinity, are driven by a combination of both local and regional growth factors. The Fullerton Park and Ride serves as a regional transit hub for destinations outside of Fullerton and will experience some regional growth. However, the area immediately surrounding the transit center is generally built out, so limited increases to local transit trips is anticipated as a result of local population growth. Transit trip growth would be anticipated to result more from the introduction of new transit services, including the Beach Boulevard transit corridor project and the Freeway BRT project identified in the 2018 LRTP.

## 8 PROJECTED TRAVEL CONDITIONS BY MODE

The OCTA 2018 LRTP forecasts increased trips and anticipated congestion for all modes of travel resulting from continued development of the remaining vacant land in Orange County, and the increased densification of already built-out areas. Table 8.1 below identifies expected growth of 16,000 transit trips per day, which will cause a 6.2% increase in delay as a percent of travel time. In addition, average freeway speed during peak morning traffic is expected to reduce from from the 38.3mph to just 36.4mph by 2040. Future additional congestion and delay on freeways is an issue to consider for all drivers and potential joint development at the Fullerton Park and Ride.

**TABLE 8.1: PERFORMANCE OF FREEWAYS AND ARTERIALS IN THE 2015 BASE YEAR AND 2040 BASELINE SCENARIO**

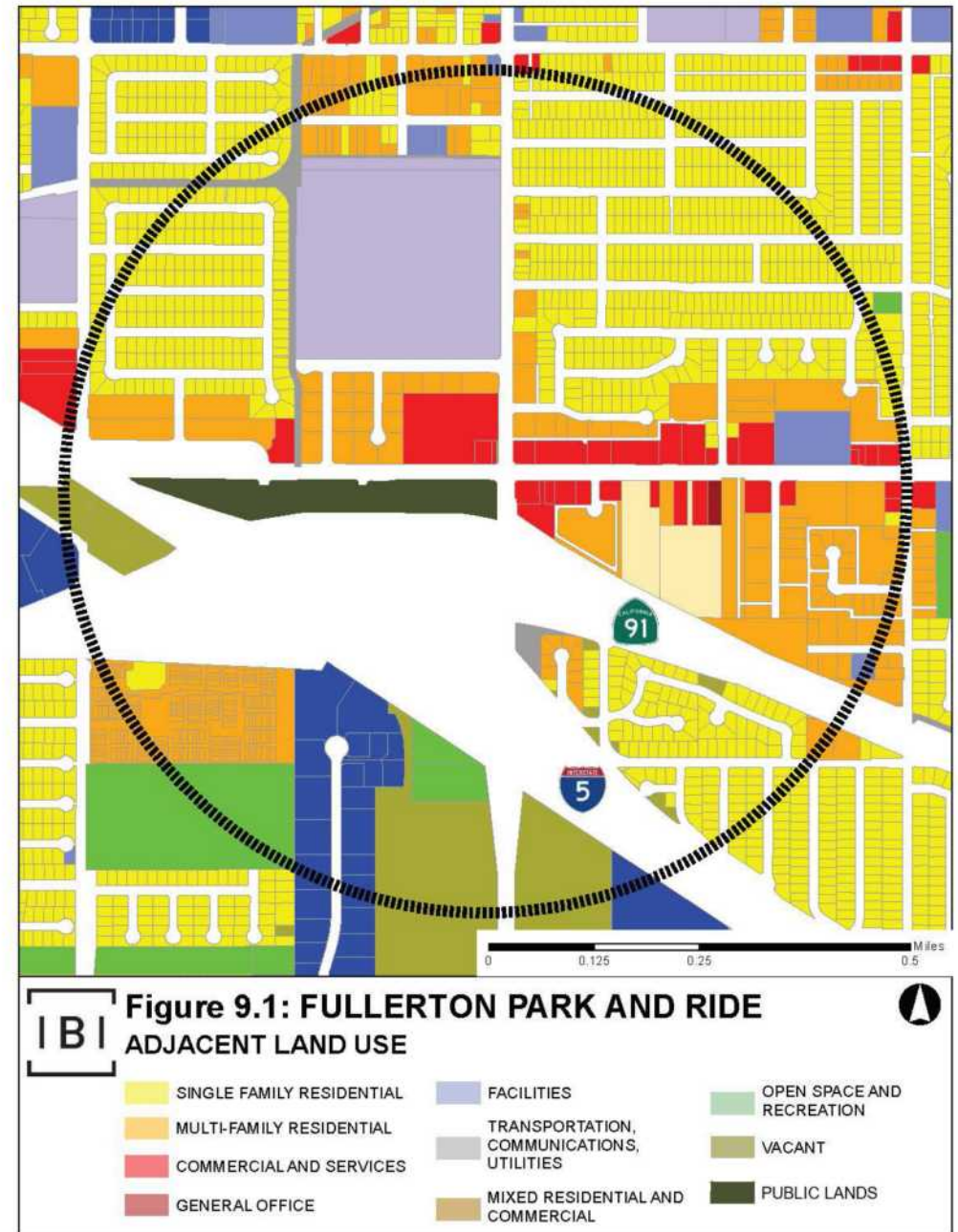
TRANSPORTATION SYSTEM PERFORMANCE SUMMARY			
Metrics (daily)	2015 Base Year	2040 Baseline	Trend 2040
Vehicle passenger delay per capita (minutes)	8.3	12.5	8.7
Vehicle passenger travel time per capita (minutes)	54.5	58.5	55.9
Delay as a percent of travel time	15.2%	21.4%	15.5%
Transit trips	149,000	165,000	174,000
Freeways - AM peak average speed (mph)	38.3	36.2	39.5
Managed lanes - AM peak capacity utilization	77%	83.6%	60%
Arterials - AM peak average speed (mph)	25.7	24.3	25.8

Note: Trend 2040 assumes managed lanes are operated as tolled express lanes by 2040

Source: OCTA 2018 LRTP<sup>4</sup>

## 9 LAND USE

The Fullerton Park and Ride site is located on an 11.1-acre parcel of land zoned for public land use. The area within a half-mile radius of the Fullerton Park and Ride site consists of mostly commercial, multi-family residential, single family residential, and public facilities uses. Figure 10.1 illustrates the various land uses within a half-mile radius of the Fullerton Park and Ride site as set forth by the City of Fullerton Zoning Code.





## 10 POTENTIAL OPPORTUNITIES AND CONSTRAINTS

The Fullerton Park and Ride has been identified by OCTA as a potential location for joint development opportunity.

### 10.1 JOINT DEVELOPMENT LITERATURE REVIEW

Several recent publications have provided guidance on the opportunities and recommended planning processes for joint public/private development projects in transit rich zones, summarized below:

**1. Moving Ahead for Progress in the 21st Century Act (MAP-21), Pub. L. 112-141 (2012),** informs FTA recipients of opportunities for private sector participation in public transportation projects, and includes the most current guidance for the federal public transportation program.

As a matter of policy, FTA encourages project sponsors to undertake joint development, and promotes the project sponsor's ability to work with the private sector and others to pursue joint development. Project sponsors can pursue joint development through new grants or with property previously acquired with FTA assistance. The project sponsor maintains satisfactory continuing control over such property used in a joint development project by ensuring that the property continues to serve its originally authorized purpose. Proceeds derived from an FTA-assisted joint development project are considered program income, which the project sponsor may apply to eligible FTA capital or operating expenses.

FTA assistance may not be used in construction of TOD projects, although it may be used to plan TOD in conjunction with transit projects. Thus, while joint development can be considered a form of TOD, it is much smaller in scope and uses project property or grant funds owned by the recipient. When the joint development incorporates either real property or other project property for which FTA assistance has been provided, or a direct investment of FTA grant funds, federal requirements apply to the joint development project. The involvement of federal assistance notwithstanding,

FTA's policy is to encourage TOD. Both joint development and TOD leverage FTA assisted projects to develop local economies and to encourage private investment near public transportation.

**2. FTA Circular 7050.1 Federal Transit Administration Guidance on Joint Development, published August 25, 2014** provides the following definitions of joint transit development opportunities:

Joint Development definition: "A public transportation project that integrally relates to, and often co-locates with commercial, residential, mixed-use, or other non-transit development. Joint development may include partnerships for public or private development associated with any mode of transit system that is being improved through new construction, renovation, or extension. Joint development may also include intermodal facilities, intercity bus and rail facilities, transit malls, or historic transportation facilities".

Shared Use: "Instances in which a project partner, separate from the recipient, occupies part of a facility and pays for its' pro rata share of the construction, maintenance, and operations costs. Shared uses must be declared at the time of grant award. Shared use and incidental use are distinguishable."

Value Capture: "The term "value capture" means recovering the increased value of property located near public transportation resulting from the investments in public transportation. While value capture on the large scale often occurs through a special assessment district, tax-increment

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financing, or similar mechanisms, joint development is a meaningful value capture mechanism readily available to a project sponsor to be applied on the small scale of one or more parcels of real property it owns. Joint development is the value capture mechanism used most often for public transportation purposes. FTA encourages all forms of value capture that can contribute to the operation, maintenance, or expansion of public transportation service."

**3. The Federal Transit Administration's Planning for Transit-Supportive Development: A Practitioner's Guide (2014)** offers a number of lessons learned for integration of local land use planning and policy with strategies for transit investment. The relevant lessons for effective partnerships are summarized below. An education and outreach strategy is recommended in order for agency partners/community stakeholders to participate in making transit-supportive land uses a part of the community fabric. Educating and engaging with partners and the public is a prerequisite to forming a transit-supportive community.

Develop a community of champions. Assemble a collaborative team of forward thinking and dedicated community members. Select champions from the public, private and not-for-profit sectors and who represent a broad range of interests. Seek to ensure that the champions communicate frequently, collaborate closely on goals and agendas, and trust each other. Consider engaging champions through small task forces or committees that meet regularly and can provide information, support, and inspiration.

Educate and engage the public. Educating the public early and often is critical in gaining support. Clearly and effectively articulate the long-term vision for the transit system. Develop a clear and well-defined transit and/or transit-supportive development message. It is essential that the message be understandable and valuable to a large constituency. Images, key messaging, numbers, quantified results and benefits need to be carefully planned and consistent. Since there are many challenges in implementing a new transit system or transit-supportive developments, performance outcomes are often the best way to explain the objectives, choices and support needed. Place an emphasis on protecting and enhancing the existing community.

Emphasize the community context. Many components are needed to create a livable community. Transit is an important component but it is not the only piece of a sustainable community. Throughout the design and planning processes for transit systems and transit-supportive development, transit agencies and local governments should engage the community in developing plans and designs that reflect diverse neighborhoods with a strong sense of community. Give attention to community building goals instead of focusing solely on mobility objectives. The perspectives of transit agencies and other planning departments should be broadened so that transit is taken as a consideration and not the only driver of community goals.

Coordinate and collaborate with public agencies. Public agency coordination and collaboration are critical. Organizational structure and institutional policies can help ensure integrated land use and transit planning and implementation. In many cases, even within a single jurisdiction, it is difficult to work past the silos of multiple departments, each with its own mission and obligations. A municipality's organizational structure that places planning, economic development, transportation, and transit all under the municipality's purview can greatly streamline the way that transit planning is coordinated.

Form partnerships among agencies. For transit projects controlled by a municipality, coordination between the transit agency and the other departments, such as planning, should help streamline the planning efforts. Policies to prioritize transit improvements along select corridors and activity centers should be incorporated into citywide plans and programs and translated to street infrastructure investments as well as the new transit service. Cross-departmental coordination can facilitate efficient planning activities for route selections and station locations, as well as actions to encourage and enable transit-supportive development.

**4. TRB Report 182: Linking Transit Agencies and Land Use Decision-Making: A Guidebook for Transit Agencies (October 2015)** This guidebook presents a range of tools and

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tips for enhancing communication and coordination as well as building a transit-supportive community. While transit agencies lack the jurisdictional authority to ensure that land use decisions are transit-supportive, they can collaborate with and proactively engage a broad range of major stakeholders and the general public to achieve the desired land use outcomes. The key tools for enhancing communication and coordination include:

**Partnering** - Early and sustained communication provides the best outcomes and increases chances of better land use decisions. Formal and informal processes of engaging transit agencies in the decision making process can both be effective in fostering early communication. Informal structures of coordination can be as equally worthwhile as formal structures of coordinating if both the transit agency and the local government value the participation and comments provided by the other. Encouraging cities to incorporate transit considerations during their development review process can allow local jurisdictions to identify potential transit issues early on. Key tools include working groups, workshops and educational programs, and monitoring and referrals.

**Strategic guidebooks** - Many local governments, transit agencies, and non-profit advocacy groups have developed handbooks and guidebooks related to transit-supportive development. The use of a guidebook and/or a website to highlight the importance of inter-agency communication, collaboration, and coordination are common strategies used to address challenges and overcome barriers associated with implementing transit-supportive development projects.

**Articulating the costs and benefits** - Local government land use planners and/or private developers may not fully understand the service and operational issues related to their land use decisions, the benefits and need for transit, or the relationship between transit and land use. Transit agencies can explain various transit requirements and make the case for including transit officials in future land use decisions. In making their case, transit agencies can explain the costs and benefits.

## 10.2 SUMMARY OF OPPORTUNITIES

The timing of this study examining options and joint development for the Fullerton Park and Ride affords OCTA with several opportunities to design a transit site that would meet the needs of its customers in the future and allow OCTA the ability to evolve with changing trends in mobility and transportation that are currently underway.

Transit centers and transportation facilities need to incorporate flexibility to meet current transportation needs and to accommodate the rapid changing landscape of individual mobility. The Fullerton Park and Ride has not drastically changed since the 1980's, making the current site infrastructure limited in its ability to adequately serve rapid expanding markets for electric vehicles, shared ride services, and active transportation modes.

The site planning efforts will explore not only opportunities for joint development on the Fullerton Park and Ride, but strategies and opportunities for improving the form and function of the site. A summary of the opportunities identified by this study, previous studies, and the literature review for the Fullerton Park and Ride include:

- Joint development and public private partnership opportunities
- Integrate transit rider needs for signs and benches into redevelopment plans
- Integrate bicycle pathways and parking into the redevelopment plans
- Designate pedestrian pathways throughout the site
- Excess parking supply can be redeveloped
- Community and local employer participation in the planning process
- Expand parking for a Park and Fly operation

- Redesign Fullerton Park and Ride to better serve future bus operation needs
- "Right size" parking and promote flexibility in design to meet today's needs, as well as the changing needs for parking in the future
- Identify the appropriate location and configuration of additional customer parking
- Improve wayfinding signage from the freeways to the Fullerton Park and Ride
- Explore potential for revenue capture opportunities of an updated Park and Ride
- Formalize shared use agreements with various transit operators
- Improve the environment and public health with more opportunities to walk and bicycle
- Current Fullerton Park and Ride does not reach capacity
- FTA grant funding available for joint development projects

## 10.3 SUMMARY OF CONSTRAINTS

The list of issues and constraints summarized below is drawn from the research and data collected for this task, in addition to the observations made at the site:

- OCTA doesn't own the land around the Park and Ride
- Free parking encourages driving and doesn't allow for revenue capture from parking fees
- Multiple parties are not communicating their interests and needs for this site, missing joint planning opportunities
- Private transit operators function separately
- OCTA may be financially constrained to buy more land for transit parking
- The site is physically constrained by the freeway and existing development and there is no undeveloped land in the vicinity

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35[illegible]

## 11.2 APPENDIX B: TRAFFIC COUNT DATA

Counts Unlimited  
PO Box 1178  
Corona, CA 92678  
(951) 268-6268

City of Fullerton  
N/S: Auto Center Drive  
E/W: Orangethorpe Avenue  
Weather: Clear

File Name : 01\_FLN\_Auto Center\_Orangethorpe AM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 1

Groups Printed- Total Volume																	
Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	83	1	6	90	1	168	26	195	1	1	5	7	12	203	3	218	510
07:15 AM	125	1	21	147	0	227	29	256	7	1	8	16	11	243	7	261	680
07:30 AM	111	1	20	132	1	294	45	340	11	3	6	20	11	305	19	335	827
07:45 AM	102	2	25	129	0	339	64	403	2	5	5	12	17	242	5	264	808
Total	421	5	72	498	2	1028	164	1194	21	10	24	55	51	993	34	1078	2825
08:00 AM	117	1	20	138	1	174	32	207	2	0	4	6	12	189	1	202	553
08:15 AM	78	0	18	96	0	157	20	177	0	0	5	5	17	178	0	195	473
08:30 AM	73	0	11	84	1	142	20	163	1	0	4	5	7	162	0	169	421
08:45 AM	68	1	15	84	1	139	17	157	3	2	4	9	16	123	1	142	392
Total	336	2	64	402	3	612	89	704	6	2	17	25	54	652	2	708	1839
Grand Total	757	7	136	900	5	1640	253	1898	27	12	41	80	105	1645	36	1786	4664
Approach %	84.1	0.8	15.1		0.3	86.4	13.3		33.8	15	51.2		5.9	92.1	2		
Total %	16.2	0.2	2.9	19.3	0.1	35.2	5.4	40.7	0.8	0.3	0.9	1.7	2.3	35.3	0.8	38.3	

Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:45 AM																	
07:15 AM	125	1	21	147	0	227	29	256	7	1	8	16	11	243	7	261	680
07:30 AM	111	1	20	132	1	294	45	340	11	3	6	20	11	305	19	335	827
07:45 AM	102	2	25	129	0	339	64	403	2	5	5	12	17	242	5	264	808
08:00 AM	117	1	20	138	1	174	32	207	2	0	4	6	12	189	1	202	553
Total Volume	455	5	86	546	2	1034	170	1206	22	9	23	54	51	979	32	1062	2868
% App. Total	83.3	0.9	15.8		0.2	85.7	14.1		40.7	16.7	42.6		4.8	92.2	3		
PHF	.910	.625	.860	.929	.500	.763	.664	.748	.500	.450	.719	.675	.750	.802	.421	.793	.867

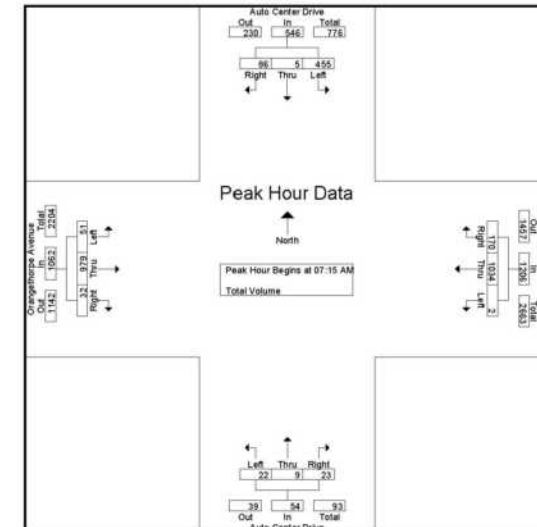
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Entire Intersection Begins at 07:15 AM

Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:15 AM	125	1	21	147	0	227	29	256	7	1	8	16	11	243	7	261	680
07:30 AM	111	1	20	132	1	294	45	340	11	3	6	20	11	305	19	335	827
07:45 AM	102	2	25	129	0	339	64	403	2	5	5	12	17	242	5	264	808
08:00 AM	117	1	20	138	1	174	32	207	2	0	4	6	12	189	1	202	553
Total Volume	455	5	86	546	2	1034	170	1206	22	9	23	54	51	979	32	1062	2868
% App. Total	83.3	0.9	15.8		0.2	85.7	14.1		40.7	16.7	42.6		4.8	92.2	3		
PHF	.910	.625	.860	.929	.500	.763	.664	.748	.500	.450	.719	.675	.750	.802	.421	.793	.867

Counts Unlimited  
PO Box 1178  
Corona, CA 92678  
(951) 268-6268

City of Fullerton  
N/S: Auto Center Drive  
E/W: Orangethorpe Avenue  
Weather: Clear

File Name : 01\_FLN\_Auto Center\_Orangethorpe AM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	07:15 AM				07:30 AM				07:45 AM				08:00 AM			
+0 mins.	125	1	21	147	0	227	29	256	1	1	5	7	12	203	3	218
+15 mins.	111	1	20	132	1	294	45	340	7	1	8	16	11	243	7	261
+30 mins.	102	2	25	129	0	339	64	403	11	3	6	20	11	305	19	335
+45 mins.	117	1	20	138	1	174	32	207	2	5	5	12	17	242	5	264
Total Volume	455	5	86	546	2	1034	170	1206	21	10	24	55	51	993	34	1078
% App. Total	83.3	0.9	15.8		0.2	85.7	14.1		38.2	18.2	43.6		4.7	92.1	3.2	
PHF	.910	.625	.860	.929	.500	.763	.664	.748	.477	.500	.750	.688	.750	.814	.447	.804



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City of Fullerton  
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Weather: Clear

File Name : 01\_FLN\_Auto Center\_Orangethorpe PM  
Site Code : 20218690  
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Page No : 1

Groups Printed- Total Volume																	
	Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	84	0	25	109	0	281	51	332	1	3	3	7	20	197	0	217	665
04:15 PM	75	0	29	104	2	278	41	321	1	0	3	4	16	188	1	205	634
04:30 PM	74	0	24	98	0	265	33	298	5	2	5	12	28	218	2	248	656
04:45 PM	67	0	30	97	0	288	41	329	2	1	6	9	18	217	1	236	671
Total	300	0	108	408	2	1112	166	1280	9	6	17	32	82	820	4	908	2626
05:00 PM	75	0	23	98	0	288	38	326	7	1	6	14	25	212	3	240	678
05:15 PM	67	0	21	88	1	313	41	355	2	0	4	6	21	217	0	238	687
05:30 PM	80	1	24	105	0	277	50	327	4	3	3	10	19	244	3	266	708
05:45 PM	79	0	20	99	1	266	37	304	9	1	8	18	23	210	0	233	654
Total	301	1	88	390	2	1144	166	1312	22	5	21	48	88	883	6	977	2727
Grand Total	601	1	196	798	4	2256	332	2592	31	11	38	80	170	1703	10	1883	5353
Approach %	75.3	0.1	24.6		0.2	87	12.8		38.8	13.8	47.5		9	90.4	0.5		
Total %	11.2	0	3.7	14.9	0.1	42.1	6.2	48.4	0.6	0.2	0.7	1.5	3.2	31.8	0.2	35.2	

Auto Center Drive Southbound					Orangethorpe Avenue Westbound					Auto Center Drive Northbound					Orangethorpe Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:45 PM																			
04:00 PM	67	0	30	97	0	288	41	329	2	1	6	9	18	217	1	236	671		
04:15 PM	75	0	23	98	0	288	38	326	7	1	6	14	25	212	3	240	678		
04:30 PM	67	0	21	88	1	313	41	355	2	0	4	6	21	217	0	238	687		
05:00 PM	80	1	24	105	0	277	50	327	4	3	3	10	19	244	3	266	708		
05:15 PM	79	0	20	99	1	266	37	304	9	1	8	18	23	210	0	233	654		
Total	300	1	98	399	2	1144	166	1312	22	5	21	48	88	883	6	977	2727		
% App. Total	74.5	0.3	25.3		0.1	87.2	12.7		38.5	12.8	48.7		8.5	90.8	0.7				
PHF	90.3	250	817	924	250	931	850	942	538	417	792	690	830	912	583	921	969		

Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	84	0	25	109	0	281	51	332	1	3	3	7	20	197	0	217	665
04:15 PM	75	0	29	104	2	278	41	321	1	0	3	4	16	188	1	205	634
04:30 PM	74	0	24	98	0	265	33	298	5	2	5	12	28	218	2	248	656
04:45 PM	67	0	30	97	0	288	41	329	2	1	6	9	18	217	1	236	671
Total	300	0	108	408	2	1112	166	1280	9	6	17	32	82	820	4	908	2626
05:00 PM	75	0	23	98	0	288	38	326	7	1	6	14	25	212	3	240	678
05:15 PM	67	0	21	88	1	313	41	355	2	0	4	6	21	217	0	238	687
05:30 PM	80	1	24	105	0	277	50	327	4	3	3	10	19	244	3	266	708
05:45 PM	79	0	20	99	1	266	37	304	9	1	8	18	23	210	0	233	654
Total	301	1	88	390	2	1144	166	1312	22	5	21	48	88	883	6	977	2727
Grand Total	601	1	186	798	4	2258	332	2592	31	11	38	80	170	1703	10	1883	5353
Approach %	75.3	0.1	24.6		0.2	87	12.8		38.8	13.8	47.5		9	90.4	0.5		
Total %	11.2	0	3.7	14.9	0.1	42.1	6.2	48.4	0.6	0.2	0.7	1.5	3.2	31.8	0.2	35.2	

Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	84	0	25	109	0	281	51	332	1	3	3	7	20	197	0	217	665
04:15 PM	75	0	29	104	2	278	41	321	1	0	3	4	16	188	1	205	634
04:30 PM	74	0	24	98	0	265	33	298	5	2	5	12	28	218	2	248	656
04:45 PM	67	0	30	97	0	288	41	329	2	1	6	9	18	217	1	236	671
Total	300	0	108	408	2	1112	166	1280	9	6	17	32	82	820	4	908	2626
05:00 PM	75	0	23	98	0	288	38	326	7	1	6	14	25	212	3	240	678
05:15 PM	67	0	21	88	1	313	41	355	2	0	4	6	21	217	0	238	687
05:30 PM	80	1	24	105	0	277	50	327	4	3	3	10	19	244	3	266	708
05:45 PM	79	0	20	99	1	266	37	304	9	1	8	18	23	210	0	233	654
Total	301	1	88	390	2	1144	166	1312	22	5	21	48	88	883	6	977	2727
Grand Total	601	1	186	798	4	2258	332	2592	31	11	38	80	170	1703	10	1883	5353
Approach %	75.3	0.1	24.6		0.2	87	12.8		38.8	13.8	47.5		9	90.4	0.5		
Total %	11.2	0	3.7	14.9	0.1	42.1	6.2	48.4	0.6	0.2	0.7	1.5	3.2	31.8	0.2	35.2	

Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	84	0	25	109	0	281	51	332	1	3	3	7	20	197	0	217	665
04:15 PM	75	0	29	104	2	278	41	321	1	0	3	4	16	188	1	205	634
04:30 PM	74	0	24	98	0	265	33	298	5	2	5	12	28	218	2	248	656
04:45 PM	67	0	30	97	0	288	41	329	2	1	6	9	18	217	1	236	671
Total	300	0	108	408	2	1112	166	1280	9	6	17	32	82	820	4	908	2626
05:00 PM	75	0	23	98	0	288	38	326	7	1	6	14	25	212	3	240	678
05:15 PM	67	0	21	88	1	313	41	355	2	0	4	6	21	217	0	238	687
05:30 PM	80	1	24	105	0	277	50	327	4	3	3	10	19	244	3	266	708
05:45 PM	79	0	20	99	1	266	37	304	9	1	8	18	23	210	0	233	654
Total	301	1	88	390	2	1144	166	1312	22	5	21	48	88	883	6	977	2727
Grand Total	601	1	186	798	4	2258	332	2592	31	11	38	80	170	1703	10	1883	5353
Approach %	75.3	0.1	24.6		0.2	87	12.8		38.8	13.8	47.5		9	90.4	0.5		
Total %	11.2	0	3.7	14.9	0.1	42.1	6.2	48.4	0.6	0.2	0.7	1.5	3.2	31.8	0.2	35.2	

Auto Center Drive Southbound				Orangethorpe Avenue Westbound				Auto Center Drive Northbound				Orangethorpe Avenue Eastbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	84	0	25	109	0	281	51	332	1	3	3	7	20	197	0	217	665
04:15 PM	75	0	29	104	2	278	41	321	1	0	3	4	16	188	1	205	634
04:30 PM	74	0	24	98	0	265	33	298	5	2	5	12	28	218	2	248	656
04:45 PM	67	0	30	97	0	288	41	329	2	1	6	9	18	217	1	236	671
Total	300	0	108	408	2	1112	166	1280	9	6	17	32	82	820	4	908	2626
05:00 PM	75	0	23	98	0	288	38	326	7	1	6	14	25	212	3	240	678
05:15 PM	67	0	21	88	1	313	41	355	2	0	4	6	21	217	0	23	

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City of Fullerton  
N/S: Magnolia Avenue  
E/W: Orangethorpe Avenue  
Weather: Clear

File Name : 02\_FLN\_Magnolia\_Orangethorpe AM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 1

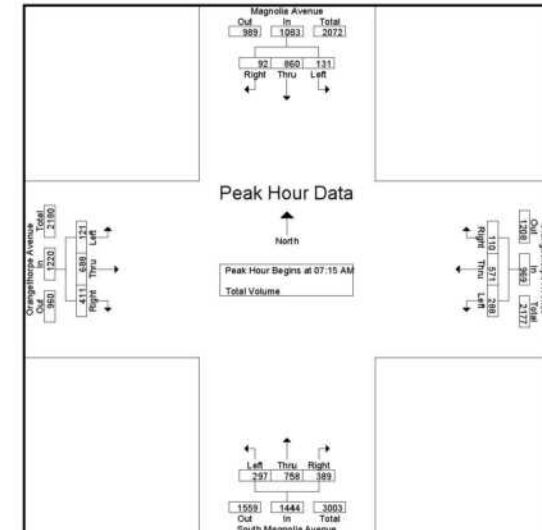
Groups Printed- Total Volume																
Start Time	Magnolia Avenue Southbound				Orangethorpe Avenue Westbound				South Magnolia Avenue Northbound				Orangethorpe Avenue Eastbound			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Int. Total
07:00 AM	22	225	11	258	69	107	7	183	69	177	69	315	18	143	93	254
07:15 AM	26	222	12	260	85	129	25	239	75	205	78	358	32	175	116	325
07:30 AM	41	189	36	266	76	160	46	282	68	165	96	329	37	183	88	308
07:45 AM	37	214	33	284	59	165	20	244	91	205	117	413	29	167	99	295
Total	128	850	92	1068	289	561	98	948	303	752	360	1415	116	668	398	1182
08:00 AM	27	235	11	273	68	117	19	204	63	183	98	344	23	163	106	292
08:15 AM	26	224	16	266	45	98	17	163	55	170	103	328	19	152	79	250
08:30 AM	18	228	17	263	45	88	19	150	49	128	88	263	22	125	86	233
08:45 AM	19	194	19	232	45	90	14	149	48	178	59	285	12	104	68	184
Total	90	881	83	1034	206	391	69	666	215	657	348	1220	76	544	339	959
Grand Total	216	1731	155	2102	495	952	167	1614	518	1409	708	2635	192	1212	737	2141
Apprch %	10.3	82.4	7.4		30.7	59	10.3		19.7	53.5	26.9		9	56.8	34.4	
Total %	2.5	20.4	1.8	24.8	5.8	11.2	2	19	6.1	16.6	8.3	31	2.3	14.3	8.7	25.2

Start Time	Magnolia Avenue Southbound				Orangethorpe Avenue Westbound				South Magnolia Avenue Northbound				Orangethorpe Avenue Eastbound			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	Int. Total
07:15 AM	26	222	12	260	85	129	25	239	75	205	78	358	32	175	118	325
07:30 AM	41	189	36	266	76	160	46	282	68	165	96	329	37	183	88	308
07:45 AM	37	214	33	284	59	165	20	244	91	205	117	413	29	167	99	295
08:00 AM	27	235	11	273	68	117	19	204	63	183	98	344	23	163	106	292
Total Volume	131	860	92	1063	288	571	110	969	297	755	369	1444	121	688	411	1220
% App. Total	12.1	79.4	8.5		29.7	58.9	11.4		20.6	52.5	26.9		9.9	56.4	33.7	
PHF	.799	.915	.639	.953	.847	.865	.598	.859	.816	.924	.831	.874	.618	.940	.871	.938

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City of Fullerton  
N/S: Magnolia Avenue  
E/W: Orangethorpe Avenue  
Weather: Clear

File Name : 02\_FLN\_Magnolia\_Orangethorpe AM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:00 AM			
+0 mins.	41	189	36	266	85	129	25	239	75	205	78	358
+15 mins.	37	214	33	284	76	160	46	282	68	165	96	329
+30 mins.	27	235	11	273	59	165	20	244	91	205	117	413
+45 mins.	26	224	16	266	68	117	19	204	63	183	98	344
Total Volume	131	862	96	1089	288	571	110	969	297	754	389	1444
% App. Total	12	79.2	8.8		29.7	58.9	11.4		20.6	52.5	26.9	
PHF	.799	.917	.667	.959	.847	.865	.598	.859	.816	.924	.831	.874



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City of Fullerton  
N/S: South Magnolia Avenue  
E/W: SR-91 Westbound Ramps  
Weather: Clear

File Name : 03\_FLN\_Magnolia\_91WAM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 1

Groups Printed- Total Volume																			
South Magnolia Avenue Southbound					SR-91 Westbound Off Ramp Westbound					South Magnolia Avenue Northbound					SR-91 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	267	112	379	75	1	29	105	66	270	0	336	0	0	0	0	0	0	620
07:15 AM	0	327	109	436	96	6	47	149	47	316	0	363	0	0	0	0	0	0	948
07:30 AM	0	277	81	358	110	4	37	151	47	317	0	364	0	0	0	0	0	0	873
07:45 AM	0	305	74	379	94	2	41	137	45	367	0	412	0	0	0	0	0	0	928
Total	0	1176	378	1552	375	13	154	542	205	1270	0	1475	0	0	0	0	0	0	3569
08:00 AM	0	335	74	409	87	2	32	121	55	304	0	359	0	0	0	0	0	0	889
08:15 AM	0	268	83	351	74	2	29	105	39	306	0	345	0	0	0	0	0	0	801
08:30 AM	0	267	97	364	86	0	21	107	43	234	0	277	0	0	0	0	0	0	748
08:45 AM	0	244	72	316	92	1	26	121	34	261	0	295	0	0	0	0	0	0	732
Total	0	1114	326	1440	339	5	110	454	171	1105	0	1278	0	0	0	0	0	0	3170
Grand Total	0	2290	702	2992	714	18	264	996	376	2375	0	2751	0	0	0	0	0	0	6739
Apprch %	0	76.5	23.5		71.7	1.8	26.5		13.7	86.3	0		0	0	0	0	0	0	
Total %	0	34	10.4	44.4	10.6	0.3	3.9	14.8	5.6	35.2	0	40.8	0	0	0	0	0	0	

South Magnolia Avenue Southbound					SR-91 Westbound Off Ramp Westbound					South Magnolia Avenue Northbound					SR-91 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:15 AM																			
07:15 AM	0	327	109	436	96	6	47	149	47	316	0	363	0	0	0	0	0	0	948
07:30 AM	0	277	81	358	110	4	37	151	47	317	0	364	0	0	0	0	0	0	873
07:45 AM	0	305	74	379	94	2	41	137	45	367	0	412	0	0	0	0	0	0	928
08:00 AM	0	335	74	409	87	2	32	121	55	304	0	359	0	0	0	0	0	0	889
Total Volume	0	1244	338	1582	387	14	157	558	194	1304	0	1498	0	0	0	0	0	0	3638
% App. Total	0	78.6	21.4		89.4	2.5	28.1		13	87	0		0	0	0	0	0	0	
PHF	0.000	0.928	0.775	0.907	0.880	0.583	0.835	0.924	0.882	0.886	0.000	0.909	0.000	0.000	0.000	0.000	0.000	0.000	0.958

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City of Fullerton  
N/S: South Magnolia Avenue  
E/W: SR-91 Westbound Ramps  
Weather: Clear

File Name : 03\_FLN\_Magnolia\_91WPM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 1

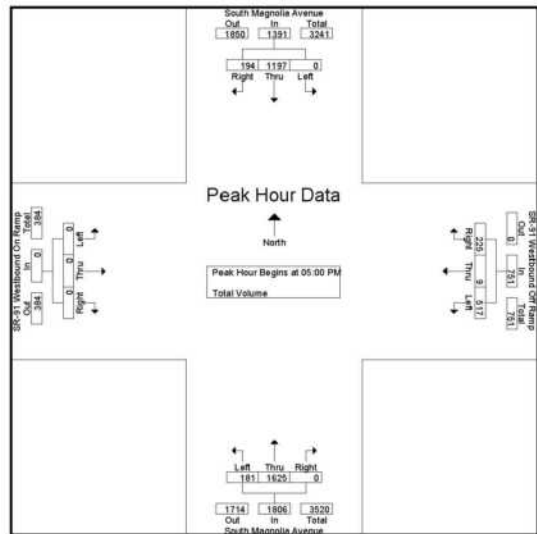
Groups Printed- Total Volume																			
South Magnolia Avenue Southbound					SR-91 Westbound Off Ramp Westbound					South Magnolia Avenue Northbound					SR-91 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	272	55	327	108	1	54	163	53	360	0	413	0	0	0	0	0	0	903
04:15 PM	0	289	54	343	112	1	58	171	45	366	0	411	0	0	0	0	0	0	925
04:30 PM	0	281	39	320	126	2	50	178	51	386	0	437	0	0	0	0	0	0	935
04:45 PM	0	301	39	340	109	1	53	163	38	397	0	435	0	0	0	0	0	0	938
Total	0	1143	187	1330	455	5	215	675	187	1509	0	1696	0	0	0	0	0	0	3701
05:00 PM	0	288	46	336	111	2	45	158	59	419	0	478	0	0	0	0	0	0	972
05:15 PM	0	307	59	366	129	1	59	189	52	435	0	487	0	0	0	0	0	0	1042
05:30 PM	0	317	45	362	132	3	62	197	33	365	0	398	0	0	0	0	0	0	957
05:45 PM	0	285	42	327	145	3	59	207	37	406	0	443	0	0	0	0	0	0	977
Total	0	1197	194	1391	517	9	225	751	181	1625	0	1806	0	0	0	0	0	0	3948
Grand Total	0	2340	381	2721	972	14	440	1426	368	3134	0	3502	0	0	0	0	0	0	7649
Apprch %	0	86	14		68.2	1	30.9		10.5	89.5	0		0	0	0	0	0	0	
Total %	0	30.6	5	35.6	12.7	0.2	5.8	18.6	4.8	41	0	45.8	0	0	0	0	0	0	

South Magnolia Avenue Southbound					SR-91 Westbound Off Ramp Westbound					South Magnolia Avenue Northbound					SR-91 Westbound On Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		Left	Thru	Right	App. Total		Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 05:00 PM																			
05:00 PM	0	288	46	336	111	2	45	158	59	419	0	478	0	0	0	0	0	0	972
05:15 PM	0	307	59	366	129	1	59	189	52	435	0	487	0	0	0	0	0	0	1042
05:30 PM	0	317	45	362	132	3	62	197	33	365	0	398	0	0	0	0	0	0	957
05:45 PM	0	285	42	327	145	3	59	207	37	406	0	443	0	0	0	0	0	0	977
Total Volume	0	1197	194	1391	517	9	225	751	181	1625	0	1806	0	0	0	0	0	0	3948
% App. Total	0	86.1	13.9		68.8	1.2	30		10	89	0		0	0	0	0	0	0	
PHF	0.000	0.944	0.822	0.950	0.891	0.750	0.907	0.907	0.767	0.934	0.000	0.927	0.000	0.000	0.000	0.000	0.000	0.000	0.947

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City of Fullerton  
N/S: South Magnolia Avenue  
E/W: SR-91 Westbound Ramps  
Weather: Clear

File Name : 03\_FLN\_Magnolia\_91W PM  
Site Code : 20218690  
Start Date : 9/19/2018  
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1  
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:30 PM				04:00 PM			
+0 mins.	0	301	39	340	111	2	45	158	51	366	0	437	0	0	0	0
+15 mins.	0	288	46	336	129	1	59	189	38	397	0	435	0	0	0	0
+30 mins.	0	307	59	366	132	3	62	197	59	419	0	478	0	0	0	0
+45 mins.	0	317	45	362	145	3	59	207	52	435	0	487	0	0	0	0
Total Volume	0	1213	191	1404	517	9	225	751	200	1637	0	1637	0	0	0	0
% App. Total	0	86.4	13.6		68.8	1.2	30		10.9	89.1	0		0	0	0	0
PHF	.000	.957	.809	.959	.891	.750	.907	.907	.847	.941	.000	.943	.000	.000	.000	.000

Location: Fullerton  
N/S: Auto Center Drive  
E/W: Orangethorpe Avenue



Date: 9/19/2018  
Day: Wednesday

#### PEDESTRIANS

	North Leg Auto Center Drive Pedestrians	East Leg Orangethorpe Avenue Pedestrians	South Leg Auto Center Drive Pedestrians	West Leg Orangethorpe Avenue Pedestrians	
7:00 AM	4	21	2	0	27
7:15 AM	4	24	4	0	32
7:30 AM	11	53	2	0	65
7:45 AM	4	8	1	0	13
8:00 AM	0	5	0	0	5
8:15 AM	0	7	2	0	9
8:30 AM	0	11	0	0	11
8:45 AM	0	2	0	0	2
TOTAL VOLUMES	23	130	11	0	164

	North Leg Auto Center Drive Pedestrians	East Leg Orangethorpe Avenue Pedestrians	South Leg Auto Center Drive Pedestrians	West Leg Orangethorpe Avenue Pedestrians	
4:00 PM	0	2	0	0	2
4:15 PM	3	8	0	0	11
4:30 PM	1	3	0	0	4
4:45 PM	0	1	1	0	2
5:00 PM	2	6	1	0	9
5:15 PM	0	1	2	0	3
5:30 PM	0	1	0	0	1
5:45 PM	0	5	0	0	5
TOTAL VOLUMES	6	27	4	0	37

Location: Fullerton  
N/S: Auto Center Drive  
E/W: Orangethorpe Avenue



Date: 9/19/2018  
Day: Wednesday

#### BICYCLES

	Southbound Auto Center Drive			Westbound Orangethorpe Avenue			Northbound Auto Center Drive			Eastbound Orangethorpe Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES	0	0	0	0	4	0	0	0	0	0	2	0	6

	Southbound Auto Center Drive			Westbound Orangethorpe Avenue			Northbound Auto Center Drive			Eastbound Orangethorpe Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:15 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	1
TOTAL VOLUMES	0	1	0	0	0	2	1	1	0	0	0	0	5

Location: Fullerton  
N/S: Magnolia Avenue  
E/W: Orangethorpe Avenue



Date: 9/19/2018  
Day: Wednesday

#### PEDESTRIANS

	North Leg Magnolia Avenue Pedestrians	East Leg Orangethorpe Avenue Pedestrians	South Leg Magnolia Avenue Pedestrians	West Leg Orangethorpe Avenue Pedestrians	
7:00 AM	0	3	0	0	3
7:15 AM	6	7	0	17	
7:30 AM	19	95	2	2	64
7:45 AM	2	7	0	0	9
8:00 AM	5	15	3	2	25
8:15 AM	2	1	1	0	4
8:30 AM	2	1	2	0	5
8:45 AM	2	3	0	0	5
TOTAL VOLUMES	38	72	13	9	132

	North Leg Magnolia Avenue Pedestrians	East Leg Orangethorpe Avenue Pedestrians	South Leg Magnolia Avenue Pedestrians	West Leg Orangethorpe Avenue Pedestrians	
4:00 PM	8	36	2	1	47
4:15 PM	2	13	5	4	24
4:30 PM	5	9	1	3	18
4:45 PM	8	13	2	1	15
5:00 PM	1	13	4	4	29
5:15 PM	4	11	7	2	24
5:30 PM	3	5	5	3	16
5:45 PM	2	5	5	0	12
TOTAL VOLUMES	36	100	31	18	185

Location: Fullerton  
N/S: Magnolia Avenue  
E/W: Orangethorpe Avenue



Date: 9/19/2018  
Day: Wednesday

#### BICYCLES

	Southbound Magnolia Avenue			Westbound Orangethorpe Avenue			Northbound Magnolia Avenue			Eastbound Orangethorpe Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	1
7:30 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:45 AM	1	9	0	0	0	0	0	0	1	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	1	1	0	0	0	0	2
8:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES	1	0	0	0	4	0	1	3	1	0	0	1	11

	Southbound Magnolia Avenue			Westbound Orangethorpe Avenue			Northbound Magnolia Avenue			Eastbound Orangethorpe Avenue			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	1	0	1	0	0	0	1	1	0	0	1	0	4
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
4:45 PM	0	0	0	0	1	0	1	0	0	0	1	0	3
5:00 PM	0	1	0	0	1	0	1	0	0	0	0	0	3
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	1	0	1	0	0	0	0	0	0	1	0	3
5:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES	1	3	1	1	3	0	3	1	0	0	5	0	18

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Location: Fullerton  
N/S: Magnolia Avenue  
E/W: SR-91 Westbound Ramps



Date: 9/19/2018  
Day: Wednesday

#### PEDESTRIANS

	North Leg Magnolia Avenue Pedestrians	East Leg SR-91 Westbound Ramps Pedestrians	South Leg Magnolia Avenue Pedestrians	West Leg SR-91 Westbound Ramps Pedestrians	
7:00 AM	0	0	0	1	1
7:15 AM	0	4	0	1	5
7:30 AM	0	1	0	0	1
7:45 AM	0	2	0	0	2
8:00 AM	0	2	0	0	2
8:15 AM	0	1	0	0	1
8:30 AM	0	0	0	0	0
8:45 AM	0	3	0	0	3
TOTAL VOLUMES	0	13	0	2	15

	North Leg Magnolia Avenue Pedestrians	East Leg SR-91 Westbound Ramps Pedestrians	South Leg Magnolia Avenue Pedestrians	West Leg SR-91 Westbound Ramps Pedestrians	
4:00 PM	0	0	0	0	0
4:15 PM	0	8	0	1	7
4:30 PM	0	2	0	2	4
4:45 PM	0	1	0	0	1
5:00 PM	0	3	0	1	4
5:15 PM	0	0	0	0	0
5:30 PM	0	3	0	2	5
5:45 PM	0	1	0	0	1
TOTAL VOLUMES	0	16	0	6	22

Location: Fullerton  
N/S: Magnolia Avenue  
E/W: SR-91 Westbound Ramps



Date: 9/19/2018  
Day: Wednesday

#### BICYCLES

	Southbound Magnolia Avenue			Westbound SR-91 Westbound Ramps			Northbound Magnolia Avenue			Eastbound SR-91 Westbound Ramps			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	0	2
7:15 AM	0	2	0	0	0	0	0	2	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	1	0	0	0	1	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	0	0	0	1	2
TOTAL VOLUMES	0	2	0	1	0	0	0	5	0	0	0	1	10

	Southbound Magnolia Avenue			Westbound SR-91 Westbound Ramps			Northbound Magnolia Avenue			Eastbound SR-91 Westbound Ramps			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	3	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	1	0	0	0	0	0	1	0	0	0	0	2
TOTAL VOLUMES	0	6	0	0	0	0	0	3	0	0	0	0	9

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## 7.1.2 CIVIL SITE ASSESSMENT

Data Source: VCA

### 2.1.1 DOMESTIC WATER

There is one existing 8" Cast Iron City water main fronting the property on Orangethorpe Avenue as shown in Exhibit C1.1.

During our site visit, four existing water meters and four existing 2" domestic water backflow preventers were located along Orangethorpe Avenue. In addition, one existing 2" irrigation backflow preventer was located along Orangethorpe Avenue. An existing water meter was also located near the existing on-site restrooms. See Exhibits C4.1, C4.2 and C4.3 for the location of these existing on-site utilities. All existing domestic and irrigation water utilities are marked in cyan.

### 2.1.2 FIRE WATER

There is one existing 8" Cast Iron City water main fronting the property on Orangethorpe Avenue as shown in Exhibit C1.1.

One existing fire hydrant was located during our site visit on the south east corner of the intersection of Orangethorpe Avenue and Auto Center Drive. The location of the existing fire hydrant is shown in red in Exhibit C4.2. Currently, there are no existing fire water lines on the project site.

### 2.1.3 SANITARY SEWER

There is one existing 39" Vitrified Clay sanitary sewer main line on Magnolia Avenue, one existing 39" Vitrified Clay sanitary sewer main line on Orangethorpe Avenue and one existing 24" Vitrified Clay sanitary sewer main line that runs along Magnolia Avenue, crosses into the project site at the western edge and continues under the I-5 Freeway. All of the existing sanitary sewer main lines surrounding the project site belong to the Orange County Sanitation District. Information gathered from the City of Fullerton and Orange County Sanitation District is shown in Exhibits C2.1 and C2.2.

During our site visit, two sanitary sewer cleanouts were located near the existing restrooms. Also, two existing sanitary sewer manholes were located during the site visit. One sewer manhole is located at the west end of the project site and the other sewer manhole is located on the public right of way along Orangethorpe Avenue. See Exhibits C4.1 and C4.2 for the location of these existing on-site utilities. All existing sanitary sewer utilities are marked in green.

### 2.1.4 STORM WATER

There are no existing off-site storm water lines fronting the project site. There is an existing flood channel that belongs to the Orange County Flood Control District (OCFCD) that runs from the north, underneath Orangethorpe Avenue and the project site and underneath Magnolia Avenue. Exhibit C3.1 shows the location of the existing flood channel that is labeled "Carbon Creek". Because the existing flood channel runs underneath the project site, no structures shall be built within the flood channel's easement. All proposed foundation type and location shall be designed to avoid surcharging the existing flood channel. Four (4) off-site side-opening catch basins were located during our site visit. The location of the off-site side-opening catch basins are shown on Exhibits C4.1 and C4.2. All storm water utilities are marked in blue.

Within the project site, one existing stormwater manhole, existing catch basins, existing v-gutters, and existing parkway drains were located during our site visit. The locations of these existing on-site utilities are shown in Exhibits C4.1, C4.2 and C4.3. All storm water utility features are marked in blue. The existing

catch basins on the west end of the project site are connected by an 18" reinforced concrete pipe. The existing stormwater lines are shown in Exhibit C3.1.

### 2.2 EXISTING DRAINAGE

Existing grades on the project site were verified in the field. The existing site utilizes gutters, ridges, and catch basins located throughout the site to capture stormwater. Exhibits C5.1, 5.2, and 5.2 shows the existing flow paths and grades that were verified at the project site.

### 3.0 PROPOSED IMPROVEMENT

#### 3.1 PROPOSED UTILITIES

This section discusses all proposed wet utilities for the OCTA Fullerton Park & Ride Joint Development. This includes the following: domestic water, fire water, and sanitary sewer. All proposed schematic utility plans are based on information was obtained from the City of Fullerton Public Works Engineering Department and the Orange County Sanitation District, our site visit and limited as-built information. There was no underground utility survey performed at this site.

##### 3.1.1 DOMESTIC WATER

The proposed domestic water system shall provide adequate water supply for operation of the buildings' domestic water requirements. Each proposed building shall have its own domestic water line and connection to the existing 8" water main line on Orangethorpe Avenue that belongs to the City of Fullerton. The existing domestic water backflow preventers are not sized to meet the demands of the proposed buildings. Thus, the existing domestic water backflow preventers cannot be used for the new development. All proposed domestic water lines will require the installation of a new water lateral, water meter and backflow preventer per the local water purveyor. Exhibit C6.0 shows the proposed utilities. Proposed domestic water lines are shown in Cyan.

##### 3.1.2 FIRE WATER

The proposed fire water system shall provide adequate water supply for operation of the buildings' fire water requirements for sprinklers. Each proposed building shall have its own fire water line and connection to the existing 8" water main line on Orangethorpe Ave that belongs to the City of Fullerton. All proposed fire water lines will require the installation of a new water lateral, water meter and Double Check Detector Assembly backflow preventer per the local water purveyor. Exhibit C6.0 shows the proposed utilities. Proposed fire water lines are shown in Red. The proposed fire water system shall be coordinated with the local fire department.

##### 3.1.3 SANITARY SEWER

The proposed sanitary sewer system shall be sized to meet the sewer demands of each building. A new sanitary sewer connection is proposed for each new building. Each proposed on-site sanitary sewer line will connect to an existing County sanitary sewer line per Orange County Sanitation District. Exhibit C6.0 shows the proposed utilities. Proposed sanitary sewer lines are shown in Green.

#### 3.2 PROPOSED DEMOLITION

The proposed demolition plan for the project is shown in Exhibit CD1.0.

### 3.3 PROPOSED DRAINAGE

All site drainage shall be collected and controlled in non-erosive drainage devices. Drainage shall not be allowed to pond anywhere on the site, and especially not against any foundation or retaining wall. The site shall be graded and maintained such that surface drainage is directed away from structures in accordance with 2016 CBC 1804.4 or other applicable standards. In addition, drainage shall not be allowed to flow uncontrolled over any descending slope. Discharge from downspouts, roof drains and scuppers are not recommended onto unprotected soils within 5 feet of the building perimeter. Landscape irrigation shall not be within 5 feet of the building perimeter footings except when enclosed in protected planters.

Positive site drainage shall be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The building pad and pavement areas shall be fine graded such that water is not allowed to pond.

Landscaping planters immediately adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. Either a subdrain, which collects excess irrigation water and transmits it to drainage structures, or an impervious above-grade planter box shall be used.

Proposed grading shall comply with the following grading design guidelines:

- a. Planes shall be sloped for drainage, typically between 1% and 1.8%, with 1.5% considered optimum.
- b. Entrance walks and ramps will not be designed to maximum allowable slope requirements, to minimize potential non-compliant as built conditions. If the space allows, slopes will be reduced as much as possible, or grading will be designed to avoid the need for ramps.
- c. Door landings, paved lunch areas, and similar areas will be graded between 0.5% to 1.8% maximum slopes. Planes will be shaped to accommodate tables and benches.
- d. Asphalt paving flow lines will be 1% minimum to accommodate construction tolerances. If less, concrete gutter will be used with a flow line minimum slope of 0.5% to accommodate construction tolerances.

### 4.0 WATER QUALITY MANAGEMENT PLAN

Per the City of Fullerton, a WQMP (Water Quality Management Plan) is required if there is an addition or replacement of 5,000 or more square feet of impervious surface on an already developed site. This project site exceeds 5,000 square feet; therefore a WQMP is required. This will be accomplished by the implementation of Best Management Practices (BMPs). The determination of the type and size of BMPs will occur during the design phase of the project. A percolation test shall be performed to assess the infiltration feasibility of the site.

### 5.0 STORMWATER POLLUTION PREVENTION PLAN

An SWPPP (Stormwater Pollution Prevention Plan) will be required, per the State of California, if the construction area of the project exceeds 1 acre. The construction area of this project site does exceed 1 acre; therefore, SWPPP is required for this project.

Fullerton Park and Ride Joint Development Study  
Orange County Transportation Authority

## 6.0 DESIGN GUIDELINES

### 1. Demolition

- a. Perform investigation of existing conditions to assure full extent of demolition work, especially with regard to sub-surface conditions such as concrete paving overlain with asphalt, foundations of demolished buildings, and utility lines. If existing data is insufficient, additional information will be requested such as potholing, underground utility survey, or other investigation from the District.
- b. All existing site features that are to remain or to be removed will be clearly identified and defined in the demolition documents.

### 2. Grading

- a. Grading will be designed to facilitate staking and construction; plane grades shall be uniform to avoid warped surfaces and grade changes minimized.
- b. All areas will be graded for drainage. Walks, stairways, ramps, and other surfaces will slope away from buildings.
- c. Planes shall be sloped for drainage, typically between 1% and 1.8%, with 1.5% considered optimum.
- d. Entrance walks and ramps will not be designed to maximum allowable slope requirements, to minimize potential non-compliant as built conditions. If the space allows, slopes will be reduced as much as possible, or grading will be designed to avoid the need for ramps.
- e. Door landings, paved lunch areas, and similar areas will be graded between 0.5% to 1.8% maximum slopes. Planes will be shaped to accommodate tables and benches.
- f. Asphalt paving flow lines will be 1% minimum to accommodate construction tolerances. If less, concrete gutter will be used with a flow line minimum slope of 0.5% to accommodate construction tolerances.

Fullerton Park and Ride Joint Development Study  
Orange County Transportation Authority

### 7. Storm Drainage Design

- a. Site will be designed using WQMP storm water mitigation requirements.

### 5. Sanitary Sewers

- a. Sanitary sewers fixture units will be shown at building and street points of connection. Sewer lines will be sized per code, or hydraulic calculations shall be provided.

### 6. Surface Drainage

- a. Sheet flow will be directed from paved areas onto planted areas.
- b. Flow lines will be located to avoid concentration on pedestrian walks.
- c. Flow lines will be located to avoid tree wells and other objects that might obstruct drainage flow and cause ponding.
- d. Drainage from planting areas across paved areas will be avoided.
- e. Drainage over public sidewalks will be avoided. Concentrated flow over driveways and pedestrian walkways will be avoided.

### 7. Catch Basins, Floor Drains and Parkway Drain:

- a. Catch basins grate will be called out to withstand the load to which it will be subjected. Grate openings will be minimum opening 1/4" to 1/2" inch maximum within the direction of travel.
- b. Catch basin will be offset from main line to minimize its size and depth, and to minimize blockage of system.



- c. Cast-in-place or precast concrete catch basins will be used.
- d. If possible, drains and swales will not be located in the accessible parking areas and path of travel. If this is unavoidable, grates will be oriented 90 degrees to the direction of travel, or will be multidirectional if there is no predominant direction of travel.

#### 8. Underground Drainage

- a. Design of drainage structures and piping systems will be based on hydrologic and hydraulic calculations. Minimum flow velocity will be 3 feet per second.
- b. Cleanouts will be installed in yard boxes at maximum spacing of 100 feet in straight runs and at each aggregate change of direction exceeding 135 degrees.

#### 9. Water Distribution

- a. Meter Protection
  - i. An approved reduced pressure principal backflow assembly will be installed at service connection for domestic and irrigation services.
  - ii. An approved double detector assembly will be installed at service connection for fire services.

#### 10. Water Service

- a. One meter will be provided for each domestic water, fire-protection water, and irrigation water service.
- b. The local water supplier shall be contacted for main, pressure and flow information.
- c. Meter locations shall be indicated on drawings and require approval by the water supplier.
- d. Service Control (Shut off) valve, strainers, pressure reducing valves, backflow prevention assemblies, etc. will be installed as a dual (parallel) configuration to avoid service interruptions during testing and servicing of devices. Devices will be designed and installed in an above ground, compact, low profile and serviceable valve station.

#### 11. Piping and Design

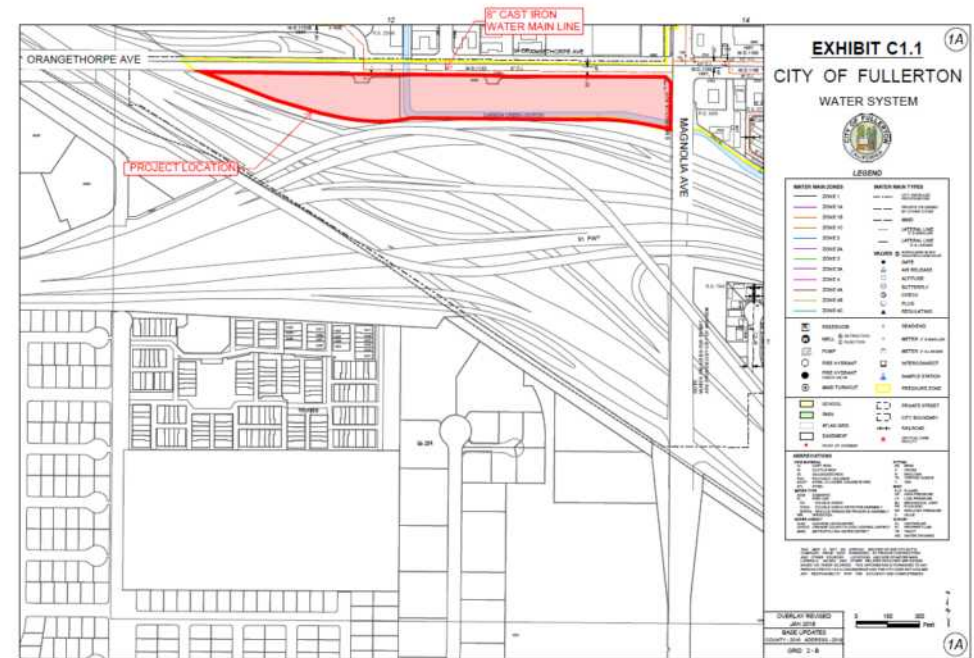
- a. Location of pressure-reducing valves will be coordinated with plumbing engineer.
- b. Tandem installations will be provided for pressure regulators, backflow preventers and strainers, to avoid shut-down testing and servicing of equipment.

#### 12. Flood Channel

- a. No structures shall be constructed within the existing flood channel easement.
- b. Foundation type and location shall be designed to avoid surcharging the existing flood channel.

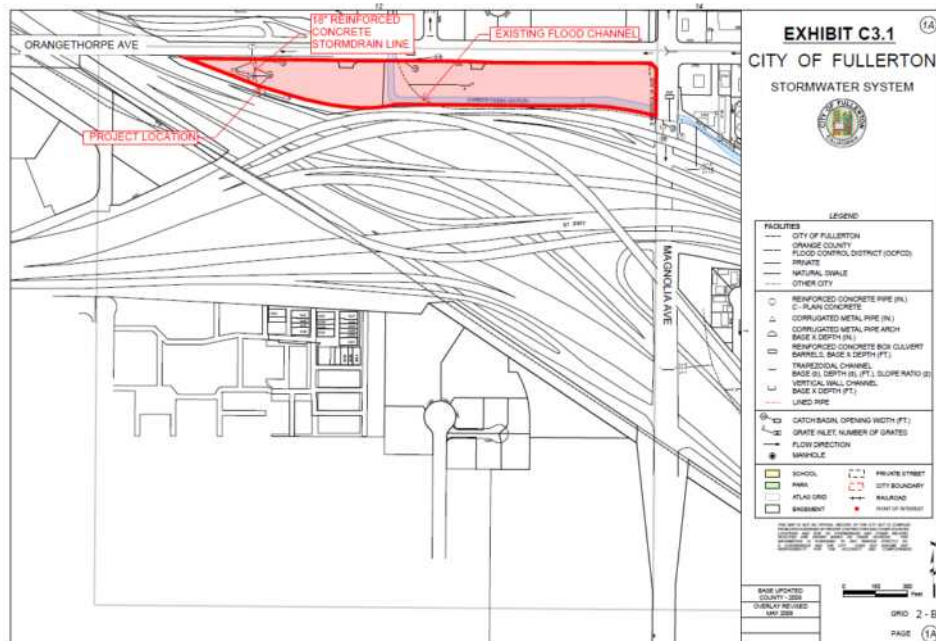
#### 13. Code Requirements

- a. ADA Standards for Accessible Design
- b. 2019 California Building Code
- c. 2019 California Plumbing Code
- d. Water Quality Management Plan Requirements per the County of Orange National Pollutant Discharge Elimination System (NPDES) Stormwater Program
- e. Stormwater Pollution Prevention Plan per the California State Water Resources Control Board





Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), OCSG, Swire, Hong Kong, U.S. Navy, NGA, USCG, USFWS.



ORANGETHORPE AVE

EXISTING SIDE OPENING CATCH BASIN

EXISTING SIDE OPENING CATCH BASIN

EXISTING SANITARY SEWER MANHOLE

EXISTING SIDE OPENING CATCH BASIN

EXISTING SIDE OPENING CATCH BASIN

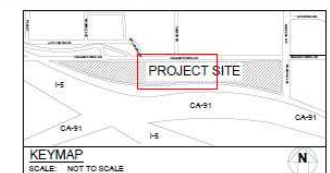
EXISTING SIDE OPENING CATCH BASIN

EXISTING V-GUTTER

EXISTING SIDE OPENING CATCH BASIN



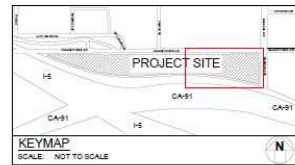
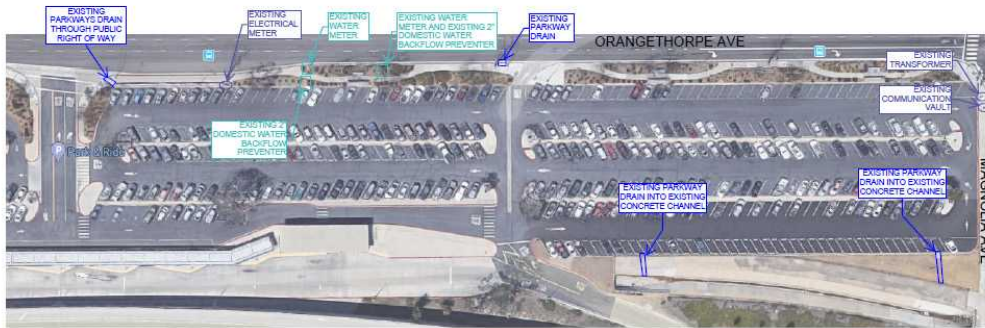
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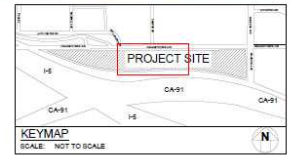
**EXHIBIT C4.3: EXISTING UTILITIES**



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**EXHIBIT C5.2: EXISTING DRAINAGE PATTERNS**

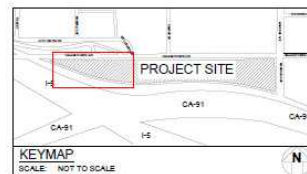
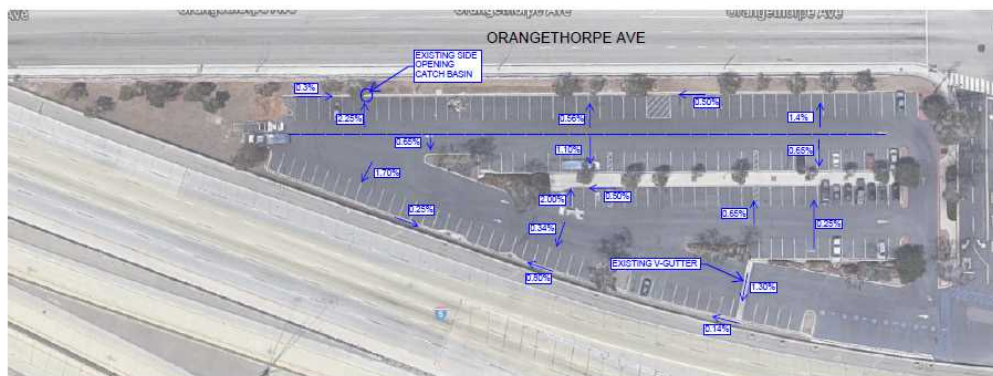
LEGEND:  
DRAINAGE PATTERNS →



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**EXHIBIT C5.1: EXISTING DRAINAGE PATTERNS**

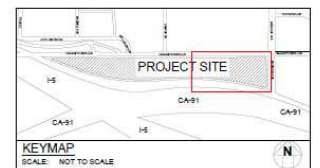
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**EXHIBIT C5.3: EXISTING DRAINAGE PATTERNS**

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DRAINAGE PATTERNS →



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# 7.2.1 MARKET STUDY AND FEASIBILITY ANALYSIS

Data Source: EPS

**Case Study: Crest Apartments (13604 Sherman Way, Van Nuys)**

Crest Apartments is a 64-unit PSH building located in the Van Nuys community of the City of Los Angeles. The building was developed by Skid Row Housing Trust, a non-profit focused on developing PSH units. The organization has developed 26 PSH properties, with the majority located in Downtown Los Angeles. Crest Apartments is one of only three of the organization’s properties located outside of Downtown, and the only one in the San Fernando Valley.

Crest Apartments was designed by Michael Maltzan Architects, which has designed a number of buildings for Skid Row Housing Trust. The buildings have been featured in architectural blogs and magazines, and demonstrate the possibility and potential of architectural sophistication in affordable housing development. With this approach, buildings can be designed in a thoughtful way that fit the site and surrounding area, and also create a space that is nurturing and supportive of its residents.

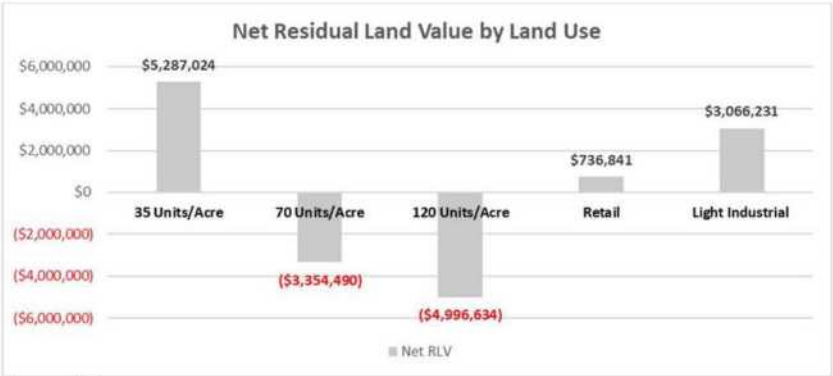
The development of the project was financed through a variety of public programs, including the Low-Income Housing Tax Credit program and the HOME Investment Partnership program administered by the city’s Housing and Community Investment Department. Funding for support services came from the Los Angeles County Department of Health Services, and are being administered by L.A. Family Housing. Subsidies for residents’ rent is being provided through project-based vouchers from the Housing Authority of the City of Los Angeles.

**Table 1. Summary of Land Uses**

Item	LAND USE				
	35 Units/Acre	Multifamily Residential 70 Units/Acre	120 Units/Acre	Nonresidential Retail	Light Industrial
Ability to Generate Revenue: Net Residual Land Value:	\$5,287,024	(\$3,354,490)	(\$4,996,634)	\$736,841	\$3,066,231
Potential to Increase OCTA Ridership	Medium	High	High	Low	Low
Mixed-Use and Pedestrian-Friendly Development	High	High	High	Medium	Low
Provides Community Amenity	Medium	Medium	Medium	Medium	Low
Compatibility with Park & Ride Function	High	High	High	Medium	Low

Source: EPS.

**Figure 1. Net Residual Land Value by Land Use**



Source: EPS.

**Methodology**

EPS made several key assumptions to ensure that the market overview focuses on use-types that are consistent with the OCTA’s goals for developing the Fullerton Park & Ride Site. Specifically, this memorandum focuses on existing market conditions affecting demand for multifamily housing, small-scale retail, office, hotel, and small-scale industrial uses near the project site. To review these conditions, EPS evaluated residential and commercial development and pricing information to analyze market trends affecting North Orange County, including the following steps:

- Evaluated current demographics, economic activity, and growth trends in areas surrounding the OCTA Fullerton Park & Ride Site to understand opportunities and constraints associated with onsite development potential;
- Reviewed pricing, vacancy, and absorption data for various land uses in North Orange County;
- Used pro forma models to provide range of achievable residual land values for uses deemed to have market demand;
- Assessed development prototypes according to economic feasibility as well as potential to meet OCTA goals.

## Site Context

The Site sits at two important intersections in North Orange County. On a regional level, the Site's location on the northern side of the I-5 and SR-91 interchange provides great access to employment and population centers as well as commercial destinations in Orange County and beyond. Additionally, the Site is located at the southwest intersection of Orangethorpe Avenue and Magnolia Avenue, two major thoroughfares in North Orange County.

Although the Site is within the city limits of Fullerton, it borders the City of Buena Park to the west. Just across the I-5/SR-91 interchange to the south and southeast is the City of Anaheim.

### Map 1. Site Context



Source: Google Earth; EPS.

### Map 2. Regional Context



Source: Google Earth; EPS.

### Area Demographics

A review of the area's demographics indicates that the area immediately surrounding the Site is home to lower income residents when compared to the County as a whole. As shown in the table below, the median household income within 1 mile of the site is approximately \$58,000 and the median household income increases as you move farther away from the Site. The median household income within 5 miles of the Site is approximately \$71,000, roughly 83 percent of Orange County's median household income of approximately \$85,000.

Homeownership rates also increase with distance from the site. Owner-occupied units comprise 42 percent of the occupied housing stock within 1 mile from the site and 51 percent within 5 miles from the site. This compares to a County-wide homeownership rate of 54 percent. Despite lower incomes and property values near the Site, vacancy rates are consistent with regional levels at 4 percent.

North County's distance from the major employment hubs in Orange County and its historically affordable rents relative to other submarkets both play a prominent role in the more blue-collar demographic profile. However, developers are turning to in-fill sites throughout Orange County as the availability of greenfield land diminishes. Collectively, Fullerton, Buena Park, and Anaheim have had collective population growth slower than the rest of the County since 2000, as seen in **Table 3**. However, these three cities, as well as the County, have seen an accelerated rate of growth since the year 2010, and are projected to have an even higher average annual rate of population growth through 2023. This acceleration of growth in the adjacent cities will require a continued emphasis on densifying existing neighborhoods in light of an urban condition that is nearly built out.



**Table 2. Demographic Profile**

Demographic Variable	1-Mile	3-Mile	5-Mile	Orange County
Population	29,061	249,543	636,886	3,132,211
Households	7,550	71,296	185,654	1,017,012
Total Housing Units	7,840	74,462	193,621	1,072,121
Owner-Occupied Units	3,315	33,760	99,708	581,506
% of Homes Owner-Occupied	42%	45%	51%	54%
Renter-Occupied Units	4,234	37,536	85,947	435,506
% of Homes Renter-Occupied	54%	50%	44%	41%
Vacant Units	291	3,166	7,966	55,109
% of Homes Vacant	4%	4%	4%	5%
Owner-occupied Housing Unit Median Value [1]	\$454,244	\$489,889	\$531,750	\$666,984
Renter-occupied Housing Unit Median Contract Rent	\$1,280	\$1,288	\$1,288	\$1,499
Median Household Income	\$57,776	\$63,798	\$70,948	\$85,323
Average Household Income	\$74,407	\$84,465	\$93,604	\$119,319
Per Capita Income	\$20,614	\$24,885	\$27,804	\$39,365

Source: ESRI Business Analyst Online; US Census Bureau, 2012-2016 American Community Survey.

[1] ESRI 2018 Estimate

**Table 3. Historical and Projected Population**

Area [1]	2000	2010	2018	2023	Avg. Annual Growth %		
					2000-18	2010-18	2018-23
Fullerton	126,003	135,108	144,214	151,258	0.75%	0.82%	0.96%
Buena Park	77,962	80,477	83,995	88,501	0.41%	0.54%	1.05%
Anaheim	328,014	336,208	357,084	375,151	0.47%	0.76%	0.99%
<b>Subtotal</b>	<b>531,979</b>	<b>551,793</b>	<b>585,293</b>	<b>614,910</b>	<b>0.53%</b>	<b>0.74%</b>	<b>0.99%</b>
<b>Orange County</b>	<b>2,846,289</b>	<b>3,008,855</b>	<b>3,221,103</b>	<b>3,396,718</b>	<b>0.69%</b>	<b>0.88%</b>	<b>1.07%</b>

Source: California Department of Finance Historical Population Estimates; EPS.

[1] Historical population estimated for January 1 of each year according to California DOF. Projected 2023 population provided by ESRI Business Analyst.

### Employment and Commercial Market Trends

According to the California Economic Development Department, Orange County had an extremely low unemployment rate of 2.8 percent in September 2018, 110 basis points lower than California's unemployment rate of 3.9 percent. Over the course of the year, Orange County had large employment gains in the business and financial service industries. However, North County is heavily reliant on the industrial and service sectors, while most white-collar employment is located in South County submarkets such as Irvine, Newport Beach, and Costa Mesa as well as north in LA. The largest employment declines over the year in Orange County were in manufacturing, with a decrease of over 3,000 jobs.

The Site sits at the convergence of two office submarkets—Fullerton and Buena Park/La Habra — neither of which are particularly choice locations for Class A Office in Orange County, and both of which have significant industrial tenant bases. In Fullerton, it has been years since office developers have brought a project of any size to market, with little in the pipeline to change this course. Developers have focused on adding apartments in this submarket instead. There is no 4 & 5 Star office inventory in Fullerton, and little likely to be added to the pipeline in the near term—there has not been any new office product delivered in the Fullerton submarket since 2008 and negative net absorption over this same period.

Although Buena Park/La Habra has seen positive absorption for office product in the submarket, rents have been flat. Buena Park/La Habra received its first injection of speculative development this cycle with the arrival of The Source Tower in 2016. The 450,000-sf project includes a mall, various entertainment and dining options, a hotel (under construction), and 96,000 sf of office. The office space is designed with tech and creative office users in mind, but as of August 2018, the project was still looking for an anchor tenant.

Cal State Fullerton (CSUF) provides a pipeline of educated employees, and supports the overall demand for commercial and rental residential real estate around the university. With an undergraduate student body of over 30,000 students, and only about 2,000 residents living in college housing, the university provides a steady stream of employees and renters. In addition to CSUF, other major office tenants and employers in Fullerton include Raytheon and St. Jude Medical Group. As such, Fullerton has become a focus for multifamily developers as these demand drivers generate strong fundamentals not found in other North County cities where employment is heavily comprised of lower paying retail, hospitality, and service jobs.

### Real Estate Market Conditions

Orange County's strong economy is reflected in its real estate market. However, the prospects for certain land uses vary by submarket and site-specific characteristics. Given the Site's location and basic market indicators, EPS conducted market analysis for office, hotel, multifamily residential, retail, and light industrial uses. This section describes the market conditions for office and hotel uses, two land uses that EPS did not continue to evaluate due to our market findings of inferior site suitability for such uses.

This section provides more detail on key real estate performance indicators for multifamily residential, retail, and light industrial land uses, uses that have been judged to have potential market support on the Site. A 3-mile radius from the center of the site is used to define the trade area for multifamily residential and retail uses. The trade area for light industrial uses is comprised of the city limits of Fullerton, Buena Park, and La Palma.

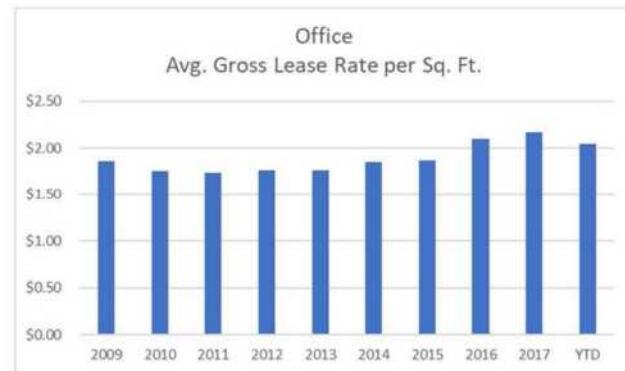
### Office

Despite the strength of the County's economy, much of the development activity has centered in submarkets not near the Site area, with strong activity in South County submarkets, Anaheim's Platinum Triangle, and the areas immediately surrounding major tourist destinations. For example, over the last several years, Orange County has experienced heavy commercial development, completing 2.7 million square feet of office space countywide. Nearly all of this development occurred in South County, with 2.1 million square feet of Class A office space located in Irvine Spectrum alone.

Although the County boasts low unemployment and major office development, Fullerton and Buena Park are not choice locations for new speculative Class A office development relative to other areas in the County. Overall, the two submarkets have a dated office stock. Fullerton has office rents that are among the bottom half of the County overall, even with healthy annual rent growth. Within 3-miles of the Site, historical rent growth has been modest for office space over the last three years, as seen in **Figure 2**. Office vacancy rates within 3-miles of the Site have been trending downward from 2009 to 2016, however, negative absorption in 2017 and 2018 has caused vacancy rates to approach 9 percent, as shown in **Figure 3**.

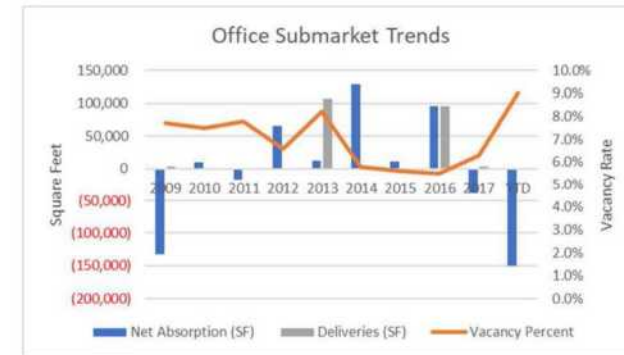
Additionally, the site's relatively small size and its distance from other Class A office parks are not in line with the characteristics typically found in the new highly-amenitized campus-like office developments being delivered in South County, whose larger footprints offer proximity to clusters of firms and landscaped open spaces to their tenants. For these reasons, EPS concludes that the OCTA site would not attract as much developer and investor interest for office use as it would for other uses.

**Figure 2. Historical Rent for Office within 3-Miles of Site**



Source: CoStar

**Figure 3. Historical Submarket Trends for Office within 3-Miles of Site**



Source: CoStar

## Hotel

According to CBRE, national lodging demand has grown every quarter since the beginning of 2010, a trend reflected in California's record-breaking year for hotel development in 2017. Demand for hotel uses in Orange County is particularly strong, buoyed by major tourist destinations such as the County's numerous theme parks and world-famous beaches. According to Atlas Hospitality Group, in Orange County there were 1,194 rooms under construction midway through 2017 compared to 2,391 rooms under construction midway through 2018, nearly doubling the number of hotel rooms under construction<sup>1</sup>. Midway through 2018, there were 72 hotels with 13,150 rooms planned or under construction in Orange County. Most of this activity is taking place near major tourist destinations, with the cities of Anaheim and Garden Grove jointly accounting for 7,600 rooms being planned or built in the County, or approximately 58 percent of the County's expected growth.

Consistent with this robust development activity, lenders and developers have been characterized as being bullish on new California hotel construction, as they see a very positive long-term outlook, in spite of hotel construction costs that are up 20-25 percent over the last 12 months, according to the Atlas Survey. However, hotel values continue to climb due to rising per-room prices.

Southern California hotel performance metrics, including occupancy and room pricing, remain historically strong, thanks in part to a nationwide travel economy that is still humming on both the leisure and corporate sides, along with group meetings and convention business. However, certain market conditions and site specifics draw questions about the OCTA Site's suitability for such uses. Countywide occupancy is between 79 percent to 82 percent, depending on the time of

<sup>1</sup> "California Hotel Development Survey 2018 Mid-Year" by Atlas Hospitality Group.



year (an 80 percent occupancy rate market-wide is generally considered full-utilization)<sup>2</sup>. Of the County's submarkets, North County actually had the highest rate—83 percent to 85 percent, depending on timeframe. Despite its high occupancy rate, North County had the lowest Revenue per Available Room (RevPAR) in the County at \$99 to \$103, compared to the Countywide RevPAR of \$155 to \$161, a gap likely due to a family travel market rather than being driven by business and luxury-driven hotel stays more common closer to the Class A office parks and main resort attractions<sup>3</sup>. The Site's distance from major tourist destinations and employment centers relative to competing existing and pipeline hotel supply are additional characteristics that are not particularly conducive to new hotel development in Orange County.

For these reasons, EPS concludes that the OCTA site would not attract as much developer and investor interest for hotel use as it would for other uses.

### Multifamily Residential

Market research indicates that multifamily residential is in high demand—demonstrated by healthy rent growth and low vacancy rates. Market-rate units in the cities of Buena Park, Fullerton, and Anaheim have a collective vacancy currently below 4 percent, with multifamily developments selling at cap rates below 5 percent. For multifamily residential units within 3-miles of the Site, average asking rents have grown by 25 percent over the last five years, as seen in **Figure 4** below. **Figure 5** shows downward trending vacancy rates over the last ten years, with little new supply being delivered in the same time frame.

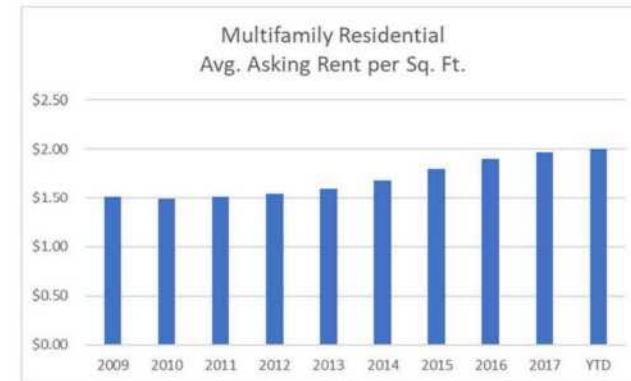
Within the North County, Buena Park, and North Anaheim Submarkets defined by CoStar, four market-rate multifamily projects have been delivered in the last five years. Project details for these projects are summarized in **Table 4**, showing monthly rents ranging from a high of \$3.05 per square foot to a low of \$1.97 per square foot.

In addition to healthy rent growth and growing demand for more housing throughout southern California, the Site seems well-suited for residential development because it is located in a predominantly residential area that is already connected to regional transportation. Multifamily residential development would be consistent with the apartments found across the street and in adjacent blocks. The Site is also near Buena Park High School, which is one block to the north. Residential land uses directly along freeways is common in the area and should not deter the marketability of residential development on the Site, especially in the current market of high demand for rental residential.

<sup>2</sup> "Hotel Markets Strong in April; CBRE Ups Outlook" by Paul Hughes. Orange County Business Journal. June 1, 2018.

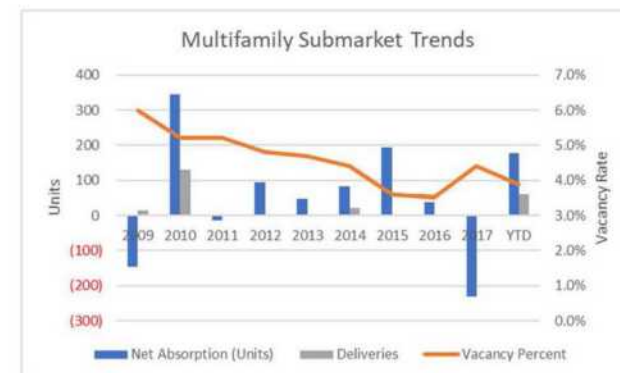
<sup>3</sup> Ibid.

**Figure 4. Historical Rent for Multifamily Residential within 3-Miles of Site**



Source: CoStar

**Figure 5. Historical Submarket Trends for Multifamily Residential within 3-Miles of Site**



Source: CoStar

**Table 4. Comparable Market-Rate Multifamily Residential Developments**

Property Name	Address	City	Year Built	Land (acres)	Total Units	Units per Acre	Asking Rent Per Sq. Ft.				
							Studio	1-Bed	2-Bed	3-Bed	Total
Pearl La Floresta	420 La Crescenta Dr	Brea	2018	2.9	204	70	\$0.00	\$3.05	\$2.76	\$2.70	\$2.94
Alexan Aspect	251 Orangefair Mall	Fullerton	2017	6.4	323	51	\$2.91	\$2.73	\$2.33	\$0.00	\$2.55
On Beach	5832 Beach Blvd	Buena Park	2018	0.8	60	75	\$2.65	\$2.06	\$1.87	\$0.00	\$2.25
Parkview Apartments	6785 Knott Ave	Buena Park	2014	1.1	22	20	\$0.00	\$0.00	\$1.97	\$0.00	\$1.97
<b>Weighted Average</b>							<b>\$2.73</b>	<b>\$2.79</b>	<b>\$2.41</b>	<b>\$2.70</b>	<b>\$2.63</b>

Source: CoStar Online

Homelessness is an important issue throughout southern California and the Site's redevelopment may present an opportunity to provide housing specific to the needs of homeless populations. EPS identified two types of housing programs for the homeless that may be appropriate to incorporate as a component of the redevelopment: Transitional/Bridge Housing and Permanent Supportive Housing. Such housing concepts develop and operate outside of market conditions, with substantial financial support from public entities, non-profit organizations, and other outside resources.

Transitional (or Bridge) housing is a medium-term model of providing housing to the homeless and unstably housed. Unlike crisis housing, where individuals are provided a bed on a night-to-night basis, residents in transitional housing typically have their own room or dwelling unit, and stay anywhere from a few weeks to a few years, depending on the facility. Many transitional housing facilities are developed and operated by non-profit and faith-based organizations.

Permanent Supportive Housing (PSH) is a long-term model of housing those who are homeless or unstably housed. The model includes providing affordable dwelling units along with support services that assist residents in areas such as mental and physical health, addiction treatment, education, and job training. Many PSH buildings are developed and/or operated by non-profit entities who can provide or coordinate the provision of supportive services. The units are rented in a manner similar to other forms of affordable housing, where the residents pay some portion of their income towards rent, typically Social Security disability income, with the remainder of the rent funded by public subsidies.

Given the non-market forces that support such developments, EPS did not quantitatively evaluate these housing concepts, but a qualitative discussion of these concepts as well as relevant development case studies are included in **Appendix A**.

## Retail

The Site's location along two major thoroughfares, as well as its continuing function as a multi-modal transit hub, suggests that a retail component may be suitable at the intersection of Magnolia Avenue and Orangethorpe Avenue. For comparably sized retail properties within 3-miles of the site, asking rent growth has been flat while net absorption has been barely positive with very little new development over the last five years, as seen in **Figures 6 and 7** below. However, the high-traffic intersection and current vacancy rates nearing 6 percent within the trade area pose some promise for including some retail uses on site. Still, the site's small size will certainly limit the ability for on-site retail uses to compete with and/or cannibalize the area's existing retail offerings, especially with more robust retail destinations nearby such as Buena

Park Place (an approximately 250,000 square foot mall) and The Source at Beach (a 450,000 square foot mixed-use complex with substantial retail and entertainment offerings).

The rise of e-commerce has changed consumer behavior in regards to retail, marked by a noticeable closure of traditional retailers (e.g. clothes, consumer products) and an increase in merchants focused on providing experiences such as food and beverage establishments. Population growth has accelerated modestly in the area since 2010 and although average incomes are lower in the area immediately surrounding the site compared to the rest of the County, the average household income within 3-miles of the site is a healthy \$84,000. These market fundamentals, combined with the Site's visibility from the freeways and access to transit through the Park & Ride, suggest potential for viable retail uses on the Site. Nontraditional retail concepts such as small-scale fitness studios and/or coffee shops may find the Site particularly appealing for the commuting customer.

**Figure 6. Historical Rent for Retail within 3-Miles of Site**



Source: CoStar



**Figure 7. Historical Submarket Trends for Retail within 3-Miles of Site**



Source: CoStar

#### Light Industrial

Throughout southern California, there is a shortage of industrial properties, whose uses include everything from logistics and warehousing to a whole host of light to heavy manufacturing. The demand for industrial uses and warehouse space is strong throughout southern California, driven by high population concentration, shifting consumer buying patterns related to e-commerce, and the region's role as a logistics hub. This shortage of supply, caused by both increasing demand as well as diminishing availability of land for industrial uses, has pushed vacancies way down while also putting upward pressure on rents. The scarcity of available supply and developable sites in the best locations has pushed distributors to edge cities such as those in the Inland Empire, farther and farther from customers. Orange County's 200 million square feet is 97.6 percent occupied with 1.2 million more square feet in the pipeline.

Activity related to several large buildings in the Fullerton and Buena Park industrial market can have significant impact on vacancy rates and absorption, such as the Buena Park JC Penney west coast logistics hub, which totals approximately 1 million square feet and which JC Penney sold in 2017 and plans to vacate. Given the vast difference in size between these much larger industrial properties and the Site, this analysis evaluates the real estate performance metrics for industrial properties under 10 acres in land size, which is comparable to the Site's acreage.

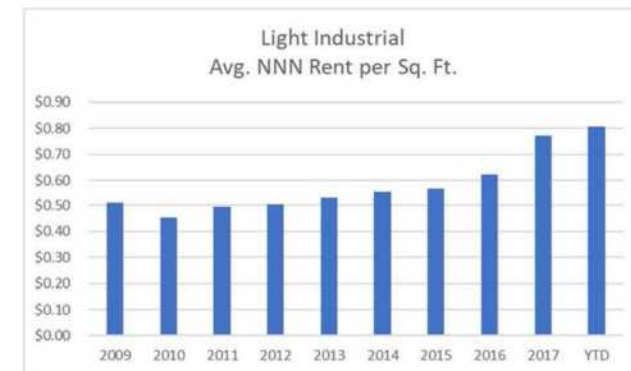
Historical rent growth for properties 10 acres and under in the cities of Fullerton and Buena Park are shown in **Figure 8** below. Industrial vacancy rates in the area have experienced a corresponding drop over the last ten years, as seen in **Figure 9**. Recent strength in the industrial sector has brought new supply to the area, with nearly 800,000 square feet delivered since 2017. The influx in new inventory explains the increase in vacancy rates over the last two years.

The Site's location in North County at the intersection of two arterial freeways, the I-5 and SR-91, makes it well-positioned to take advantage of traffic to and from LA's ports, supported by the area's industrial and service sectors. The Union Pacific Railroad also passes through a dense industrial node north of the Site in Buena Park—one of Orange County's densest concentrations of high-bay (28-foot clear height) warehouse space. For industrial uses, the Site is strategically

accessible to Los Angeles, the ports of LA and Long Beach to the west, and the Inland Empire to the east.

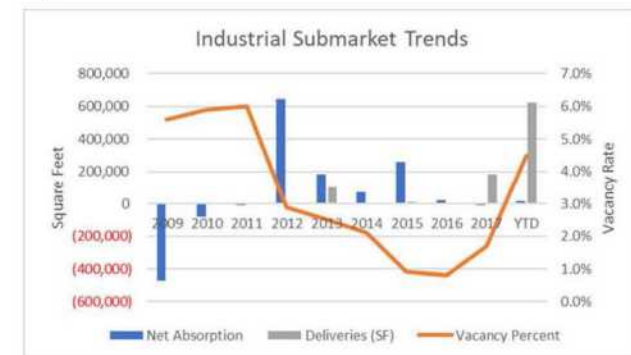
While the Site's location and surrounding uses and infrastructure are supportive of industrial uses, the Site's relatively small size may not be the most ideal for the type of large-scale warehouses typical of new light industrial development. Still, EPS has determined that strong regional and sub-regional demand for industrial space presents a development opportunity for OCTA's site, and thus has carried forward for feasibility and land value analysis below.

**Figure 8. Historical Rent for Light Industrial Uses in Fullerton and Buena Park**



Source: CoStar

**Figure 9. Historical Submarket Trends for Industrial in Buena Park and Fullerton**



Source: CoStar

## Residual Land Value Analysis

The following section details the pro forma analysis conducted to assess the feasibility of land uses judged to have potential market support at the Site. Multifamily residential land uses were evaluated at three densities: 35 units per acre, 70 units per acre, and 120 units per acre. Nonresidential land uses evaluated include retail and light industrial development prototypes.

### Methodology

Based on market information summarized in the previous section, EPS conducted a Residual Land Value (RLV) Analysis using static pro forma models. The analysis starts with five development prototypes. Residential development at 35 and 70 units per acre are representative of densities built in recently delivered multifamily developments in the area. Residential development at a higher density (120 units per acre) was also tested for feasibility purposes. Retail and industrial prototypes were tested according to site size and common floor to area ratios (FAR) for their respective land uses. The retail prototype is tested for 15,000 gross square feet of retail space at an FAR of 0.25. Feasibility of industrial uses were tested using a prototype based on an FAR of 0.4 on 3 acres of land.

The retail and industrial prototypes use parking standards consistent with the City of Fullerton Zoning Ordinance, which requires 1 parking space per 250 gross square feet of retail space and 1 parking space per 1,000 square feet of industrial space. The residential prototypes assume a City Conditional Use Permit to allow for the reduction of parking requirements to one space per unit.

Using lease rates based on market research of the surrounding area and cap rates on recent sales transactions, EPS estimated the capitalized market value of each prototype. These building values are compared to the costs to construct these development prototypes, resulting in residual land values for each prototype.

### RLV Analysis Results

The results of the RLV analysis are summarized in **Table 5** below, and indicate that lower-density housing, retail, and light industrial uses may yield positive land value for OCTA, while higher density housing (70 or more units per acre) faces a feasibility challenge in the near term. **Figure 9** further illustrates the building values, developments costs, and resulting residual land values for each of the development prototypes evaluated.

For residential development, the least dense multifamily prototype has the highest residual land value due to the lower cost to construct 2-3 story residential projects relative to residential projects taller than 3 stories. This analysis assumes that residential development at 70 units per acre and 120 units per acre on the Site would require 4-7 stories, resulting in the higher costs associated with that construction type. Additionally, residential development at 35 and 70 units per acre are assumed to be surface parked, whereas development of 120 units per acre requires structured parking. Given the high cost of structured parking, assumed to be \$25,000 per space compared to \$5,000 per space for surface parking, EPS assumed a parking strategy of half surface space and half structured spaces to improve the project economics of this particular prototype. However, the resulting residual land value remained negative.

This analysis also assumes the same residential rental rate per square foot for each of the three residential prototypes. The two denser residential prototypes would have to achieve higher rents in order to support their more expensive construction costs. If the two denser communities were able to command a premium over the achievable rent for the 35 unit per acre prototype, then

their respective residual land values would rise. However, such premiums are typically associated with better views, which the adjacent freeway greatly curtails at this Site.

Retail presents a positive residual land value, indicating that the rents achievable for this prototype can support the cost of new retail construction. The light industrial use commands a much lower lease rate than the retail prototype, but the significantly lower cost to build relatively simple industrial buildings results in a positive residual land value.

Although the modest residual land value for retail might raise concerns regarding the viability of new retail construction, on-site retail offerings can also serve as a community asset. The assumed monthly lease rate for the retail prototype of \$2.00 per square foot is based on historical rent trends and current market rents for retail uses within 3-miles of the Site. However, the Site's unique setting situated at a Park & Ride location may allow retail uses to attain a modest rent premium due to its increased visibility and exposure from the Park & Ride, freeways, and access to transit. Another potential way to improve the viability of retail is to include ground-floor retail as a component of a vertical mixed-use building, which may provide opportunities for cutting retail construction costs.

Non-traditional retail concepts that complement the function of the Park & Ride, such as a car wash or fitness center that transit-riders can use before or after their commutes, may be an appropriate fit for the site. The unique nature of these concepts may alter the economic viability for a potential retail component of the Site, but have not been considered in this analysis, which has focused on more traditional "strip" or "pad" retail.

Details of commercial land sales that have sold since 2015 and within 3-miles of the Site are summarized in **Table 6**. The properties proposed for residential uses sold at a range of \$40-\$119 per square foot of land. On the OCTA Site, only the residential prototype at 35 units per acre achieved a residual land value approaching this range. Considerable increases in lease rates or a reduction in total development costs would be needed to improve the residual land values of the denser residential prototypes.

**Table 6** also shows that properties proposed for retail uses sold at a range of \$21-73 per square foot of land. EPS has estimated retail rents for the OCTA Site to be \$2.00 per square foot, but on-site retail rents would have to reach \$2.50 per square foot in order to push residual land values within the range of these comparable recent commercial land sales. In the second quarter of 2018, retail rents in the Buena Park and Fullerton submarkets overall were \$2.44 per square foot and \$2.33 per square foot, respectively. However, these average submarket rents include larger retail development typologies that are not appropriate for the relatively small OCTA Site — such as malls, power centers, and neighborhood centers.

A reduction in parking requirements would alleviate the cost burden of parking and improve residual land values across all development prototypes evaluated, residential and nonresidential.



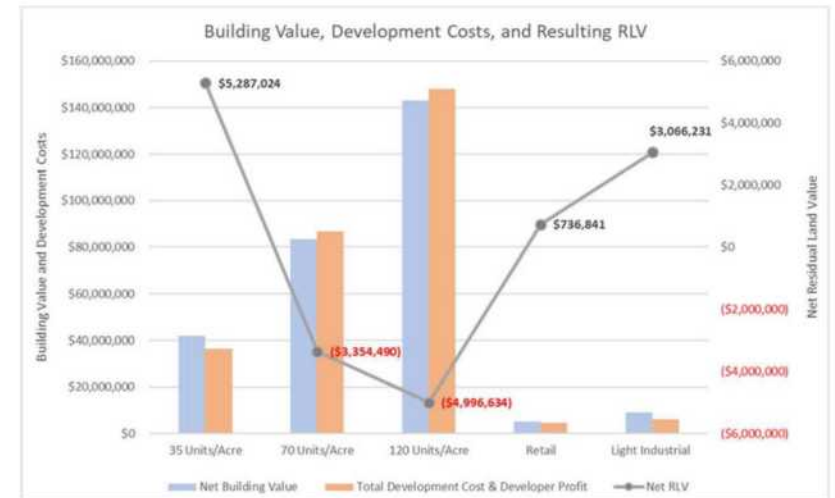
**Table 5. Residual Land Value Analysis Summary**

Item	LAND USE				
	Multifamily Residential			Nonresidential	
	35 Units/Acre	70 Units/Acre	120 Units/Acre	Retail	Light Industrial
<b>Development Assumptions</b>					
Site Size (acres)	3.00	3.00	3.00	1.38	3.00
Site Size (sq. ft.)	130,680	130,680	130,680	60,000	130,680
Number of Residential Units	105	210	360		
Avg. Net Unit Size (sq. ft.)	900	900	900		
Building Efficiency Ratio	85%	85%	85%	100%	95%
Gross Building Area	111,176	222,353	381,176	15,000	52,272
Parking Spaces per Unit/per 1,000 SF nonresidential [1]	1.0	1.0	1.0	4.0	1.0
<b>Operating Assumptions</b>					
Rent per Sq. Ft. per Month [2]	\$2.85	\$2.85	\$2.85	\$2.00	\$1.00
Vacancy Rate	5%	5%	5%	5%	3%
Operating Expenses	30%	30%	30%	4%	2%
<b>Cost Assumptions</b>					
<b>Hard Costs</b>					
Basic Site Work per Sq. Ft. Land	\$5	\$5	\$5	\$5	\$5
Building Direct Cost per gross Sq. Ft. [3]	\$194	\$222	\$222	\$169	\$62
Soft Costs (% of Hard Costs)	30%	30%	30%	20%	20%
<b>Other Costs</b>					
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%	4%
Structured Parking per Space [4]	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Surface Parking per Space	\$5,000	\$25,000	\$5,000	\$5,000	\$5,000
<b>Revenues</b>					
Annual Net Operating Income	\$2,148,214	\$4,296,427	\$7,368,732	\$328,320	\$568,463
Exit Cap Rate [5]	5%	5%	5%	8%	6%
Net Building Value [6]	\$41,694,742	\$83,389,484	\$142,953,401	\$5,307,840	\$9,157,823
Net Building Value per Unit/Building SF	\$397,093	\$397,093	\$397,093	\$354	\$175
<b>Costs</b>					
Hard Costs	\$22,167,675	\$49,993,763	\$85,236,931	\$2,836,123	\$3,895,430
Soft Costs	\$6,650,302	\$14,998,138	\$25,571,079	\$667,225	\$777,086
Other Costs	\$3,118,619	\$11,099,274	\$18,972,721	\$606,301	\$680,998
Total Development Costs (TDC)	\$31,936,595	\$76,091,205	\$129,780,732	\$4,009,648	\$5,343,502
TDC per Residential Unit/Nonresidential Sq. Ft.	\$304,158	\$362,339	\$360,502	\$267	\$102
<b>Land Value</b>					
Gross Residual Land Value	\$9,758,147	\$7,298,279	\$13,172,669	\$1,298,192	\$3,814,321
Less Developer Profit of 14% [7]	(\$4,471,123)	(\$10,652,789)	(\$18,169,302)	(\$561,351)	(\$748,090)
<b>Net Residual Land Value</b>	<b>\$5,287,024</b>	<b>(\$3,354,490)</b>	<b>(\$4,996,634)</b>	<b>\$736,841</b>	<b>\$3,066,231</b>
RLV per Acre	\$1,762,341	(\$1,118,163)	(\$1,665,545)	\$534,946	\$1,022,077
RLV per Land Sq. Ft.	\$40	(\$26)	(\$38)	\$12	\$23

- [1] Residential uses assume City of Fullerton  
[2] Based on CoStar market research.  
[3] All Building Direct Costs assume a 10 percent premium to account for prevailing wage requirements. Direct costs based on the following sources:  
Residential at 35 units per acre based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 2-3 stories.  
Residential at 70 units per acre based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.  
Residential at 120 units per acre based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.  
Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail 2-3.  
Industrial Tiltpup Construction 2015 Cost Estimate  
for a 50,000 sq ft building with 28 ft. clearance.  
[4] Residential development at 70 units and 120 units per acre are assumed to have all structured parking. All other prototypes are assume surface parking.  
[5] Based on recent property sale transactions in the area.  
[6] Includes a 3% disposition cost for the sale.  
[7] Net Residual Land Value is calculated as Net Building Value minus Total Development Costs minus a Developer Profit assumed at 14% of Total Development Costs.

Source: CoStar; City of Fullerton; Saylor's Current Construction Cost; Millie and Severson Industrial Tiltpup Construction; EPS.

**Figure 9. Building Values, Development Costs, and Resulting Residual Land Values**



Source: EPS.

**Table 6. Commercial Land Sales Since 2015**

Address	City	Sale Date	Proposed Use	Land Area		Sale Price		
				Acres	Sq. Ft.	Total	Per Acre Land	Per SF Land
Proposed Residential Uses								
6572 Stanton Ave	Buena Park	7/31/2018	Apartment	1.40	60,984	\$7,227,500	\$5,162,500	\$119
600 W Commonwealth Ave (Part of Multi-Property Sale)	Fullerton	7/3/2018	Apartment	4.79	208,652	\$19,770,000	\$4,127,349	\$95
2730 W Bal Rd	Anaheim	8/1/2017	Townhomes	1.84	80,150	\$4,000,000	\$2,173,924	\$50
6572 Stanton Ave	Buena Park	4/13/2017	Apartment	1.40	60,984	\$2,410,000	\$1,721,429	\$40
1001-1035 N Magnolia Ave	Anaheim	5/8/2015	Apartment	2.90	126,324	\$5,925,000	\$1,905,172	\$44
6242 Orangeflorpe Ave	Buena Park	2/29/2015	Condominiums	2.90	126,324	\$5,000,000	\$1,724,138	\$40
Weighted Average						\$2,884,603	\$66	
Proposed Retail Uses								
7861 Beach Blvd	Buena Park	9/13/2017	Retail, F&B	2.92	127,195	\$8,400,000	\$2,876,712	\$68
7113 Firestone Blvd	Buena Park	8/23/2016	Retail, auto	4.00	174,240	\$3,700,000	\$925,000	\$21
924-926 S Beach Blvd	Anaheim	6/3/2016	Retail, car wash	1.07	46,809	\$3,400,000	\$3,177,570	\$73
7840 Beach Blvd	Buena Park	1/15/2016	Retail, F&B	1.85	80,751	\$1,978,000	\$1,065,919	\$24
Weighted Average						\$1,776,016	\$41	

Source: CoStar Online, EPS.

## Conclusion

The OCTA Fullerton Park and Ride Site offers economically feasible redevelopment potential for several land use prototypes, presenting OCTA with the opportunity to generate revenue and unlock the value of the Site's land. EPS evaluated the development feasibility of three prototypes for multifamily residential development at varying densities as well as nonresidential uses such as retail and light industrial uses. The results of the feasibility analysis are summarized in **Table 7** below, showing promise for residential development at 35 units per acre. Light industrial prototype also achieved a positive residual land value, while retail land uses resulted in a modest residual land value.

In addition to generating revenue, OCTA can also use the redevelopment of the Site to achieve a number of other goals. These goals range from increasing OCTA and transit ridership to creating a mixed-use and pedestrian-friendly environment. These goals are also listed in **Table 7**, along with the likelihood for each land use to be able to meet each goal. **Figure 10** displays the net residual value for each land use prototype analyzed.

**Table 7. Ability to Achieve OCTA Goals by Land Use**

Item	LAND USE			Nonresidential	
	35 Units/Acre	Multifamily Residential 70 Units/Acre	120 Units/Acre	Retail	Light Industrial
Ability to Generate Revenue: Net Residual Land Value	\$5,287,024	(\$3,354,490)	(\$4,996,634)	\$736,841	\$3,066,231
Potential to Increase OCTA Ridership	Medium	High	High	Low	Low
Mixed-Use and Pedestrian-Friendly Development	High	High	High	Medium	Low
Provides Community Amenity	Medium	Medium	Medium	Medium	Low
Compatibility with Park & Ride Function	High	High	High	Medium	Low

Source: EPS.

**Figure 10. Net Residual Land Value by Land Use**



Source: EPS.

### Recommendations

Redevelopment of the OCTA Fullerton Park & Ride Site has the potential to generate financial value for OCTA as well as meet a number of placemaking and economic development goals. These are near-term recommendations for OCTA to guide the implementation process so as to maximize the value unlocked from the Site's redevelopment:

**Prioritize Goals for Project Site.** Although generating revenue for OCTA is a priority, the Site's ability to meet OCTA's non-financial goals should be considered relative to the potential to achieve those goals by other means. For example, other OCTA redevelopment sites may be better suited for and more efficient at achieving certain goals (e.g. providing housing or community assets) than the development options being contemplated at the Fullerton Site.

**Evaluate Strategic Public Investment.** EPS conducted a pro forma analysis demonstrating that current market conditions produce a marginally feasible project for certain land uses. To the extent that OCTA, the City of Fullerton and the City of Buena Park have goals that can be achieved through the Site's redevelopment, a collaborative public investment strategy may help certain desired land use programs overcome development feasibility hurdles. Ultimately, the need to discount land, waive or defer impact fees, and contribute outside funding/grants to achieve public sector and community objectives should be based on a refined financial assessment.

**Initiate Developer Selection and Negotiations.** As similar infill development projects emerge and as other redevelopment opportunities for public-private partnerships are considered for other sites throughout the County, an important next step will be to evaluate specific attributes of such a project at the Fullerton Site and initiate developer discussions.



## APPENDIX A

### Multifamily Housing Concepts for the Homeless

Homelessness is an important issue throughout southern California and the Site's redevelopment may present an opportunity to provide housing specific to the needs of homeless populations. EPS identified two types of housing programs for the homeless that may be appropriate to incorporate as a component of the redevelopment: Transitional/Bridge Housing and Permanent Supportive Housing. Such housing concepts develop and operate outside of market conditions, with substantial financial support from public entities, non-profit organizations, and other outside resources. Given the non-market forces that support such developments, EPS did not quantitatively evaluate these housing concepts, but provided a qualitative discussion in its place. Below are descriptions of two types of housing solutions for the homeless, followed by three case studies of successful projects.

#### Transitional/Bridge Housing

Transitional (or Bridge) housing is a medium-term model of providing housing to the homeless and unstably housed. Unlike crisis housing, where individuals are provided a bed on a night-to-night basis, residents in transitional housing typically have their own room or dwelling unit, and stay anywhere from two weeks to two years, depending on the facility. The housing is also combined with the provision of support services, to help transition residents into a more permanent housing situation. Transitional housing facilities often target specific segments of the homeless population, such as women, youth, LGBT individuals, or veterans.

Many transitional housing facilities are developed and operated by non-profit and faith-based organizations. While in the past they have received funding through HUD, local housing authorities, and foundations, the model is beginning to fall out of favor, with a preference being given to funding Housing First initiatives and Permanent Supportive Housing development (see below). As a result, many transitional housing facilities are losing funding and are unable to house and support as many individuals. According to organizations that operate transitional housing, losing this model, especially before a much greater number of PSH units become available, will have (and is already having) the effect of increasing the number of people living on the street.

#### Permanent Supportive Housing

Permanent Supportive Housing (PSH) is a long-term model of housing those who are homeless or unstably housed. The model includes providing affordable dwelling units along with support services that assist residents in areas such as mental and physical health, addiction treatment, education, and job training.

Many PSH buildings are developed and/or operated by non-profit entities who can provide or coordinate the provision of supportive services. The units are rented in a manner similar to other forms of affordable housing, where the residents pay some portion of their income towards rent, typically Social Security disability income, with the remainder of the rent funded by public subsidies. Development of PSH buildings is also typically financed through public or institutional and corporate philanthropic sources, including grants and tax credit programs. While providing much-needed capital, these sources often come with many bureaucratic requirements and have a finite amount of funding available. Therefore, there is an interest in finding other ways to finance PSH that can complement and expand the capacity of these traditional sources.

Developers have also utilized innovative approaches to building design and construction to help save time and cost.

#### Case Study: Potter's Lane

Located in Orange County's Midway City, Potter's Lane is a 15-unit housing development targeting chronically homeless veterans. The project was developed by American Family Housing, a non-profit providing housing and support services to homeless and low-income individuals and families in Los Angeles, Orange, and San Bernardino counties. Monthly rent is \$1,200, but tenants only pay up to 30% of their income towards it, with the rest subsidized through HUD's Veterans Affairs Supportive Housing Voucher program administered by the Orange County Housing Authority.

The innovation at Potter's Lane was the use of shipping containers as the raw materials for the building. GrowthPoint Structures, a Los Angeles-based company that manufactures modular buildings fabricated around used shipping containers, provided the pieces, and SVA Architects designed units utilizing three containers for a total size of 480 square feet. The use of GrowthPoint's containers were not only more cost-effective than traditional materials, but the prefabricated nature of the containers and the factory's proximity to the site reduced construction time to just five months.

Just over half of the financing for the project came from a variety of public funding sources, including, the State Veteran's Housing and Homeless Prevention Program, Orange County Housing Successor Agency funds, and the Federal Home Loan Bank (FHLB) Affordable Housing Program. The remainder of the financing came from the Home Depot Foundation, a conventional loan, and American Family Housing's own funding sources.

#### Case Study: PSH Colden

PSH Colden, located in South Los Angeles, is an eight-unit building under development by FlyAwayHomes targeting the chronically homeless. Like Potter's Lane, the building is being constructed using the modular fabricated shipping containers from GrowthPoint Structures. The eight four-bedroom units will each house four individuals, where residents have their own bedroom and share common living and kitchen space with the other three.

FlyAwayHomes is a social benefit organization founded by a local development company and property management company, in partnership with The People Concern, a Los Angeles social services agency. The innovation with PSH Colden is that, unlike the vast majority of PSH and other affordable housing projects, the development is being financed through private investment. FlyAwayHomes will lease the building to The People Concern, generating a cash flow and providing a modest return to investors. The People Concern will in turn find qualified residents, operate the building, and provide support services. It is anticipated that about one-third of the tenants will pay rent of \$550/month from their Social Security disability income, while the remaining two-thirds will have their rent of \$800/month paid for through LA County's Housing for Health project.

By using private financing, the developer did not need to go through the application process and adhere to all of the standards and requirements dictated by public financing, such as paying a prevailing wage. This led to a less expensive and accelerated development process. More importantly, the success of this model will significantly open up funding sources and lead to more PSH development than could be supported through the sole use of the finite funds available through public programs.

**Case Study: Crest Apartments (13604 Sherman Way, Van Nuys)**

Crest Apartments is a 64-unit PSH building located in the Van Nuys community of the City of Los Angeles. The building was developed by Skid Row Housing Trust, a non-profit focused on developing PSH units. The organization has developed 26 PSH properties, with the majority located in Downtown Los Angeles. Crest Apartments is one of only three of the organization's properties located outside of Downtown, and the only one in the San Fernando Valley.

Crest Apartments was designed by Michael Maltzan Architects, which has designed a number of buildings for Skid Row Housing Trust. The buildings have been featured in architectural blogs and magazines, and demonstrate the possibility and potential of architectural sophistication in affordable housing development. With this approach, buildings can be designed in a thoughtful way that fit the site and surrounding area, and also create a space that is nurturing and supportive of its residents.

The development of the project was financed through a variety of public programs, including the Low-Income Housing Tax Credit program and the HOME Investment Partnership program administered by the city's Housing and Community Investment Department. Funding for support services came from the Los Angeles County Department of Health Services, and are being administered by L.A. Family Housing. Subsidies for residents' rent is being provided through project-based vouchers from the Housing Authority of the City of Los Angeles.



# 7.2.2 MARKET STUDY AND FEASIBILITY ANALYSIS SUMMARY

Data Source: EPS

## EXECUTIVE SUMMARY

To: Ray Whitchurch, IBI Group  
From: Darin Smith and Julie Cooper  
Subject: OCTA Fullerton Park & Ride Joint Development Market Study and Feasibility Analysis; EPS #184011  
Date: July 11, 2019

The Orange County Transportation Authority (OCTA) is considering development options on its Fullerton Park & Ride property (Site) at the southwest corner of Orangethorpe and Magnolia Avenues. Although the Site is a functioning Park & Ride facility servicing several OCTA and Metro bus routes, the property's parking lots are underutilized, presenting the potential for development while retaining its role as a multi-modal transit hub. OCTA's goals for the site include a development that generates revenue as well as increases transit ridership.

As part of a consulting team led by IBI Group, Economic & Planning Systems, Inc. (EPS) has evaluated the market viability and financial feasibility of a variety of uses, including multifamily residential at various densities, retail, office, hotel, and light industrial uses. EPS produced a detailed memorandum on December 10, 2018, and the firm's conclusions are summarized in this Executive Summary.

## Summary of Findings

1. OCTA's Fullerton Park & Ride property's market position is strengthened by its strong accessibility and visibility due to its transit service and adjacency to the region's freeway system (the I-5 / SR 91 interchange) as well as frontage on significant surface streets.
2. Residential development appears to be in demand at and around the OCTA site, given regional and local growth patterns, and can yield strong benefits to OCTA in terms of transit ridership. However, local market-rate rents are modest compared to some other areas, which will affect the financial feasibility of new housing, particularly at higher densities that cost more to construct (due to structured parking, life safety requirements, etc.).
3. Office development does not appear to be in high demand in the vicinity of the OCTA property, and is not recommended as a prioritized land use.

Executive Summary

OCTA Fullerton Park & Ride Joint Development Market Study and Feasibility Analysis

July 11, 2019

Page 2

4. Hotel use is also not recommended as a prioritized use, as the local area commands relatively low room rates and the site is not competitive in terms of convenience with the many other hotels serving tourist destinations in the vicinity.
5. Retail development does appear to be in demand, given the site's strong accessibility and visibility, and should be considered a viable use as a stand-alone development or as part of a mixed-use development.
6. Light industrial development is also in demand, though such use may not be optimally compatible with the typical ridership and placemaking goals of transit-oriented development.
7. The OCTA site could also be an appropriate location for affordable housing or various housing solutions meant to serve the County's homeless population, but would not be expected to generate significant land revenues for OCTA.
8. EPS prepared financial analysis that compares the value of potential market-supported developments to their construction costs, and yields "residual land values" estimating what OCTA might expect to receive for the sale or lease of the property. This analysis indicated that lower-density multifamily may yield the highest land values, followed by light industrial uses. Higher-density housing with structured parking appears to have feasibility challenges in the near term, as they have higher construction costs while the value of the units does not increase proportionately.
9. When considering the potential disposition of its property at the Fullerton Park & Ride, OCTA will account for a variety of factors including transit ridership impacts, placemaking and community compatibility, and local and regional needs in addition to maximizing revenue from the land disposition. **Table 1** below characterizes how each land use tested for the Site addresses a variety of OCTA goals.

**Table 1. Summary of Land Uses and OCTA Objectives**

OCTA Objective	LAND USE				
	Multifamily Residential			Nonresidential	
	35 Units/Acre	70 Units/Acre	120 Units/Acre	Retail	Light Industrial
Potential Land Value to OCTA	High	Low	Low	Medium	High
Potential OCTA Ridership Gains	Medium	High	High	Low	Low
Mixed-Use & Pedestrian-Friendly	High	High	High	Medium	Low
Provides Community Amenity	Medium	Medium	Medium	Medium	Low
Compatible with Park & Ride	High	High	High	Medium	Low

Source: EPS.

10. As market conditions evolve, developers may be more optimistic about higher density housing or other uses than this analysis suggests. EPS recommends that OCTA be realistic in their expectations regarding financial returns from the land itself, but also aspirational about the long-term use of the property. A developer solicitation process that encourages creativity to meet a variety of objectives, rather than simply maximizing land value, may yield very positive results for OCTA and the local community.

The Economics of Land Use



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**FULLERTON PARK-AND-RIDE JOINT DEVELOPMENT STUDY (REPORT)**

Orange County Transportation Authority

7.3 PROFORMAS

Data Source: EPS

OCTA Fullerton Joint Development  
Land Use Prototypes and Residual Land Value Summary

LINEAR PLAN

Item	LAND USE						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Development Assumptions</b>							
Number of Residential Units	130	86	28				
Avg. Net Unit Size (sq. ft.)	603	300	394				
Rentable Sq. Ft.	78,447	25,806	11,042	62,595	18,000		
Building Efficiency Ratio	85%	85%	85%	90%	100%		
Gross Building Area	92,290	30,360	12,990	69,550	18,000		
Parking Spaces per Unit/per 1,000 SF nonresidential	0.00	0.00	0.00	0.00	0.00		
Total Parking Spaces	0	0	0			494	56
Net New Parking Spaces [1]	0	0	0	0	0	494	56
<b>Operating Assumptions</b>							
Rent per Sq. Ft. per Month [2]	\$3.05	\$3.50	\$1.23	\$2.25	\$2.00		
Vacancy Rate	5%	5%	5%	5%	5%		
Operating Expenses	30%	30%	100%	20%	4%		
<b>Cost Assumptions</b>							
<b>Hard Costs</b>							
Basic Site Work per gross Sq. Ft.	\$5	\$5	\$5	\$5	\$5		
Building Direct Cost per gross Sq. Ft. [3]	\$222	\$244	\$222	\$169	\$144		
Structured Parking per Space [3]	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Soft Costs (% of Hard Costs)	30%	30%	30%	20%	20%	20%	20%
<b>Other Costs</b>							
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%	4%	4%	4%
<b>Revenues</b>							
Annual Net Operating Income	\$1,909,309	\$720,762	\$0	\$1,284,449	\$393,984		
Desired Yield on Cost [4]	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$34,714,716	\$13,104,756	\$0	\$17,125,992	\$5,253,120		
Net Building Value per Unit/Building SF	\$267,036	\$152,381	\$0	\$246.24	\$291.84	N/A	N/A
<b>Costs</b>							
Hard Costs (including Parking)	\$20,940,715	\$7,562,414	\$2,947,447	\$12,101,700	\$2,683,347	\$12,350,000	\$1,400,000
Soft Costs	\$6,262,215	\$2,268,724	\$884,234	\$2,420,340	\$536,869	\$2,470,000	\$280,000
Other Costs	\$2,450,054	\$884,802	\$344,851	\$1,306,984	\$289,801	\$1,333,800	\$151,200
Total Development Costs (TDC)	\$29,652,984	\$10,715,940	\$4,176,533	\$15,829,024	\$3,509,918	\$16,153,800	\$1,831,200
TDC per Residential Unit/Commercial SF/Stall	\$228,254	\$124,604	\$149,162	\$227.59	\$194.99	\$32,700	\$32,700
<b>Land Value</b>							
Supportable Residual Land Value	\$5,041,722	\$2,388,816	\$0	\$1,296,968	\$1,743,302	-\$16,153,800	-\$1,831,200
Land Value per Unit or Bldg SF	\$38,782	\$27,777	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				<b>PRIVATE</b>	<b>\$10,470,808</b>	<b>PARKING</b>	<b>-\$17,985,000</b>
Starting Annual Ground Lease at 6% of Value					\$628,248		
Annual Debt Service on Parking Costs [5]							-\$1,169,950
Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]							38
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$1,958,727</b>

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 550 structured parking spaces and 363 retained surface spaces.  
[2] Based on CoStar market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.  
[3] All building Direct Costs assume prevailing wage requirements and are based on the following sources:  
Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.  
Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.  
Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.  
Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking.  
[4] Based on recent property sale transactions in the area and LPS professional judgment.  
[5] Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.  
[6] Assumes ground lease payments escalate 2% annually while debt service payment remain constant.  
Source: IBI Group; CoStar; Saylor's Current Construction Costs 2018; EPS.

OCTA Fullerton Joint Development  
Land Use Prototypes and Residual Land Value Summary

LAYERED PLAN

Item	LAND USE						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Development Assumptions</b>							
Number of Residential Units	200	20	16				
Avg. Net Unit Size (sq. ft.)	600	306	383				
Rentable Sq. Ft.	119,969	6,120	6,120	35,901	32,170		
Building Efficiency Ratio	85%	85%	85%	90%	100%		
Gross Building Area	141,140	7,200	7,200	39,890	32,170		
Parking Spaces per Unit/per 1,000 SF nonresidential	0.00	0.00	0.00	0.00	0.00		
Total Parking Spaces	0	0	0	0	0	519	272
Net New Parking Spaces [1]	0	0	0	0	0	519	272
<b>Operating Assumptions</b>							
Rent per Sq. Ft. per Month [2]	\$3.05	\$3.50	\$1.27	\$2.25	\$2.00		
Vacancy Rate	5%	5%	5%	5%	5%		
Operating Expenses	30%	30%	100%	20%	4%		
<b>Cost Assumptions</b>							
<b>Hard Costs</b>							
Basic Site Work per gross Sq. Ft.	\$5	\$5	\$5	\$5	\$5		
Building Direct Cost per gross Sq. Ft. [3]	\$222	\$244	\$222	\$169	\$144		
Structured Parking per Space [3]	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Soft Costs (% of Hard Costs)	30%	30%	30%	20%	20%	20%	20%
<b>Other Costs</b>							
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%	4%	4%	4%
<b>Revenues</b>							
Annual Net Operating Income	\$2,919,925	\$170,932	\$0	\$736,689	\$704,137		
Desired Yield on Cost [4]	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$53,089,554	\$3,107,847	\$0	\$9,822,514	\$9,388,493		
Net Building Value per Unit/Building SF	\$265,448	\$155,392	\$0	\$246.24	\$291.84	N/A	N/A
<b>Costs</b>							
Hard Costs (including Parking)	\$32,024,841	\$1,793,458	\$1,633,689	\$6,940,860	\$4,795,738	\$12,975,000	\$6,800,000
Soft Costs	\$9,607,452	\$538,037	\$490,107	\$1,388,172	\$959,148	\$2,595,000	\$1,360,000
Other Costs	\$3,746,906	\$209,835	\$191,142	\$749,613	\$517,840	\$1,401,300	\$734,400
Total Development Costs (TDC)	\$45,379,200	\$2,541,330	\$2,314,937	\$9,078,645	\$6,272,625	\$16,971,300	\$8,894,400
TDC per Residential Unit/Commercial SF/Stall	\$226,896	\$127,066	\$144,684	\$227.59	\$194.99	\$32,700	\$32,700
<b>Land Value</b>							
Supportable Residual Land Value	\$7,710,355	\$566,518	\$0	\$743,869	\$3,115,668	-\$16,971,300	-\$8,894,400
Land Value per Unit or Bldg SF	\$38,552	\$28,326	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				<b>PRIVATE</b>	<b>\$12,136,409</b>	<b>PARKING</b>	<b>-\$25,865,700</b>
Starting Annual Ground Lease at 6% of Value					\$728,185		
Annual Debt Service on Parking Costs [5]							-\$1,682,601
Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]							44
<b>NPV of OCTA Revenues over 50 Years at 5% Discount Rate</b>							<b>-\$7,290,113</b>

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 791 structured parking spaces and 140 retained surface spaces.  
[2] Based on CoStar market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.  
[3] All building Direct Costs assume prevailing wage requirements and are based on the following sources:  
Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.  
Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.  
Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.  
Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking.  
[4] Based on recent property sale transactions in the area and LPS professional judgment.  
[5] Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.  
[6] Assumes ground lease payments escalate 2% annually while debt service payment remain constant.  
Source: IBI Group; CoStar; Saylor's Current Construction Costs 2018; EPS.



OCTA Fullerton Joint Development  
Land Use Prototypes and Residual Land Value Summary

HORSESHOE PLAN

Item	LAND USE						
	Apartments	Micro Units	Permanent Supportive Housing	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Development Assumptions</b>							
Number of Residential Units	50	70	26				
Avg. Net Unit Size (sq. ft.)	592	304	383				
Rentable Sq. Ft.	29,597	21,250	9,945	53,496	32,365		
Building Efficiency Ratio	85%	85%	85%	90%	100%		
Gross Building Area	34,820	25,000	11,700	59,440	32,365		
Parking Spaces per Unit/per 1,000 SF nonresidential	0.00	0.00	0.00	0.00	0.00		
Total Parking Spaces	0	0	0	0	0	421	129
Net New Parking Spaces [1]	0	0	0	0	0	421	129
<b>Operating Assumptions</b>							
Rent per Sq. Ft. per Month [2]	\$3.05	\$3.50	\$1.27	\$2.25	\$2.00		
Vacancy Rate	5%	5%	5%	5%	5%		
Operating Expenses	30%	30%	100%	20%	4%		
<b>Cost Assumptions</b>							
<b>Hard Costs</b>							
Basic Site Work per gross Sq. Ft.	\$5	\$5	\$5	\$5	\$5		
Building Direct Cost per gross Sq. Ft. [3]	\$222	\$244	\$222	\$169	\$144		
Structured Parking per Space [3]	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Soft Costs (% of Hard Costs)	30%	30%	30%	20%	20%	20%	20%
Other Costs							
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%	4%	4%	4%
<b>Revenues</b>							
Annual Net Operating Income	\$720,361	\$593,513	\$0	\$1,097,738	\$708,405		
Desired Yield on Cost [4]	5.50%	5.50%	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$13,097,480	\$10,791,136	\$0	\$14,636,506	\$9,445,402		
Net Building Value per Unit/Building SF	\$261,950	\$154,159	\$0	\$246.24	\$291.84	N/A	N/A
<b>Costs</b>							
Hard Costs (including Parking)	\$7,900,701	\$6,227,284	\$2,654,745	\$10,342,560	\$4,824,807	\$10,525,000	\$3,225,000
Soft Costs	\$2,370,210	\$1,868,185	\$796,423	\$2,068,512	\$964,961	\$2,105,000	\$645,000
Other Costs	\$924,382	\$728,592	\$310,605	\$1,116,998	\$521,072	\$1,136,700	\$348,300
Total Development Costs (TDC)	\$11,195,294	\$8,824,062	\$3,761,773	\$13,528,068	\$6,310,848	\$13,766,700	\$4,218,300
TDC per Residential Unit/Commercial SF/Stall	\$223,906	\$126,058	\$144,684	\$227.59	\$194.99	\$32,700	\$32,700
<b>Land Value</b>							
Supportable Residual Land Value	\$1,902,186	\$1,967,075	\$0	\$1,108,437	\$3,134,554	\$13,766,700	-\$4,218,300
Land Value per Unit or Bldg SF	\$36,044	\$28,101	\$0	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>							
Starting Annual Ground Lease at 6% of Value				PRIVATE	\$8,112,252	PARKING	-\$17,985,000
Annual Debt Service on Parking Costs [5]					\$486,735		
Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]							46
NPV of OCTA Revenues over 50 Years at 5% Discount Rate							-\$5,568,655

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 550 structured parking spaces and 281 retained surface spaces.

[2] Based on local market research for smaller units, with 10% premium for new construction. Micro-units get another 10% premium. PSH units are priced at 30% AMI for a 1-person household.

[3] All building Direct Costs assume prevailing wage requirements and are based on the following sources:

Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories, plus a 10% premium per sq. ft. for micro units.

Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.

Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for store, retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.

Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

[4] Based on recent property sale transactions in the area and LPS professional judgment.

[5] Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

[6] Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

Source: IBI Group; CoStar; Saylor's Current Construction Costs 2018; EPS.

OCTA Fullerton Joint Development  
Land Use Prototypes and Residual Land Value Summary

DEVELOPER'S OPTION 1 PLAN

Item	LAND USE			
	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
<b>Development Assumptions</b>				
Number of Residential Units	424			
Avg. Net Unit Size (sq. ft.)	528			
Rentable Sq. Ft.	223,720	24,100		
Building Efficiency Ratio	85%	100%		
Gross Building Area	263,200	24,100		
Parking Spaces per Unit/per 1,000 SF nonresidential	0.00	0.00		
Total Parking Spaces	0	0	506	88
Net New Parking Spaces [1]	0	0	506	88
<b>Operating Assumptions</b>				
Rent per Sq. Ft. per Month [2]	\$3.05	\$2.00		
Vacancy Rate	5%	5%		
Operating Expenses	30%	4%		
<b>Cost Assumptions</b>				
<b>Hard Costs</b>				
Basic Site Work per gross Sq. Ft.	\$5	\$5		
Building Direct Cost per gross Sq. Ft. [3]	\$222	\$144		
Structured Parking per Space [3]	\$25,000	\$25,000	\$25,000	\$25,000
Soft Costs (% of Hard Costs)	30%	20%	20%	20%
Other Costs				
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%
<b>Revenues</b>				
Annual Net Operating Income	\$5,445,121	\$527,501		
Desired Yield on Cost [4]	5.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$99,002,201	\$7,033,344		
Net Building Value per Unit/Building SF	\$233,496	\$291.84	N/A	N/A
<b>Costs</b>				
Hard Costs (including Parking)	\$59,720,406	\$3,592,704	\$12,650,000	\$2,200,000
Soft Costs	\$17,916,122	\$718,541	\$2,530,000	\$440,000
Other Costs	\$6,987,288	\$388,012	\$1,366,200	\$237,600
Total Development Costs (TDC)	\$84,623,816	\$4,699,256	\$16,546,200	\$2,877,600
TDC per Residential Unit/Commercial SF/Stall	\$199,584	\$194.99	\$32,700	\$32,700
<b>Land Value</b>				
Supportable Residual Land Value	\$14,378,386	\$2,334,088	-\$16,546,200	-\$2,877,600
Land Value per Unit or Bldg SF	\$33,911	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				
Starting Annual Ground Lease at 6% of Value		\$1,002,748		
Annual Debt Service on Parking Costs [5]				-\$1,263,546
Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				24
NPV of OCTA Revenues over 50 Years at 5% Discount Rate				\$6,155,760

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 594 structured parking spaces and 325 retained surface spaces.

OCTA Fullerton Joint Development  
Land Use Prototypes and Residual Land Value Summary

DEVELOPER'S OPTION 2 PLAN

Item	LAND USE			
	Apartments	Commercial	Private Structured Parking	OCTA Structured Parking
<b>Development Assumptions</b>				
Number of Residential Units	466			
Avg. Net Unit Size (sq. ft.)	534			
Rentable Sq. Ft.	248,829	19,310		
Building Efficiency Ratio	85%	100%		
Gross Building Area	292,740	19,310		
Parking Spaces per Unit/per 1,000 SF nonresidential	0.00	0.00		
Total Parking Spaces	0	0	533	266
Net New Parking Spaces [1]	0	0	533	266
<b>Operating Assumptions</b>				
Rent per Sq. Ft. per Month [2]	\$3.05	\$2.00		
Vacancy Rate	5%	5%		
Operating Expenses	30%	4%		
<b>Cost Assumptions</b>				
<b>Hard Costs</b>				
Basic Site Work per gross Sq. Ft.	\$5	\$5		
Building Direct Cost per gross Sq. Ft. [3]	\$222	\$144		
Structured Parking per Space [3]	\$25,000	\$25,000	\$25,000	\$25,000
Soft Costs (% of Hard Costs)	30%	20%	20%	20%
<b>Other Costs</b>				
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%
<b>Revenues</b>				
Annual Net Operating Income	\$6,056,249	\$422,657		
Desired Yield on Cost [4]	5.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$110,113,619	\$5,635,430		
Net Building Value per Unit/Building SF	\$236,295	\$291.84	N/A	N/A
<b>Costs</b>				
Hard Costs (including Parking)	\$66,423,069	\$2,878,635	\$13,325,000	\$6,650,000
Soft Costs	\$19,926,921	\$575,727	\$2,665,000	\$1,330,000
Other Costs	\$7,771,499	\$310,893	\$1,439,100	\$718,200
Total Development Costs (TDC)	\$94,121,489	\$3,765,255	\$17,429,100	\$8,698,200
TDC per Residential Unit/Commercial SF/Stall	\$201,977	\$194.99	\$32,700	\$32,700
<b>Land Value</b>				
Supportable Residual Land Value	\$15,992,130	\$1,870,176	-\$17,429,100	-\$8,698,200
Land Value per Unit or Bldg SF	\$34,318	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>				
Starting Annual Ground Lease at 6% of Value	PRIVATE	\$17,862,306	PARKING	-\$26,127,300
Annual Debt Service on Parking Costs [5]		\$1,071,738		
Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]				-1,699,618
NPV of OCTA Revenues over 50 Years at 5% Discount Rate				\$1,212,155

[1] For these calculations, the parking costs for housing and commercial spaces are assumed to be provided as structured parking. Site plan shows 799 structured parking spaces and 160 retained surface spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:  
Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.  
Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.  
Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

[4] Based on recent property sale transactions in the area and EPS professional judgment.

[5] Assumes OCTA issues debt for full structured parking cost at 5% interest with 30-year amortization.

[6] Assumes ground lease payments escalate 2% annually while debt service payment remain constant.

Source: IBI Group, CoStar, Saylor's Current Construction Costs 2018; EPS.

OCTA Fullerton Joint Development  
Land Use Prototypes and Residual Land Value Summary

PHASED PLAN

Item	LAND USE				
	Apartments	Office	Retail	Private Structured Parking	OCTA Structured Parking
<b>Development Assumptions</b>					
Number of Residential Units	82				
Avg. Net Unit Size (sq. ft.)	522				
Rentable Sq. Ft.	42,840	27,900	10,800		
Building Efficiency Ratio	85%	90%	100%		
Gross Building Area	50,400	31,000	10,800		
Parking Spaces per Unit/per 1,000 SF nonresidential	0.00	0.00	0.00		
Total Parking Spaces	0	0	0	0	0
Net New Parking Spaces [1]	0	0	0	0	0
<b>Operating Assumptions</b>					
Rent per Sq. Ft. per Month [2]	\$3.05	\$2.25	\$2.00		
Vacancy Rate	5%	5%	5%		
Operating Expenses	30%	20%	4%		
<b>Cost Assumptions</b>					
<b>Hard Costs</b>					
Basic Site Work per gross Sq. Ft.	\$5	\$5	\$5		
Building Direct Cost per gross Sq. Ft. [3]	\$222	\$169	\$144		
Structured Parking per Space [3]	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Soft Costs (% of Hard Costs)	30%	20%	20%	20%	20%
<b>Other Costs</b>					
Development Contingency (% of Hard & Soft Costs)	5%	5%	5%	5%	5%
Developer Fee (% of Hard and Soft Costs)	4%	4%	4%	4%	4%
<b>Revenues</b>					
Annual Net Operating Income	\$1,042,683	\$572,508	\$236,390		
Desired Yield on Cost [4]	5.50%	7.50%	7.50%		
Net Building Value (Supportable Development Costs)	\$18,957,868	\$7,833,440	\$3,151,872		
Net Building Value per Unit/Building SF	\$231,194	\$246.24	\$291.84	N/A	N/A
<b>Costs</b>					
Hard Costs (including Parking)	\$11,435,822	\$5,394,000	\$1,610,008	\$0	\$0
Soft Costs	\$3,430,747	\$1,078,800	\$322,002	\$0	\$0
Other Costs	\$1,337,991	\$582,552	\$173,881	\$0	\$0
Total Development Costs (TDC)	\$16,204,560	\$7,055,352	\$2,105,891	\$0	\$0
TDC per Residential Unit/Commercial SF/Stall	\$197,617	\$227.59	\$194.99		
<b>Land Value</b>					
Supportable Residual Land Value	\$2,753,308	\$578,088	\$1,045,981	\$0	\$0
Land Value per Unit or Bldg SF	\$33,577	\$18.65	\$96.85		
<b>SUM OF TOTAL PROGRAM LAND VALUES</b>					
Starting Annual Ground Lease at 6% of Value		PRIVATE	\$4,377,377	PARKING	\$0
Annual Debt Service on Parking Costs [5]			\$262,643		
Years of Ground Lease Payment until OCTA Parking Costs are Repaid [6]					\$0
NPV of OCTA Revenues over 50 Years at 5% Discount Rate					\$6,699,869

[1] For these calculations, the housing, office, and retail developments are assumed to utilize existing spaces.

[2] Based on CoStar market research for smaller units, with 10% premium for new construction.

[3] All Building Direct Costs assume prevailing wage requirements and are based on the following sources:  
Residential based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Apartment, 4-7 stories.  
Office based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles.  
Retail based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Store, Retail, less an assumed savings of \$25 because the proposed retail is in the ground floor of residential and garage buildings.  
Structured parking based on Saylor's Current Construction Costs 2018 in Zone 4 and Los Angeles for Garage, Parking

[4] Based on recent property sale transactions in the area and EPS professional judgment.





# Fullerton Park-and-Ride Joint Development Study

# Background

- “Joint development” – an OCTA asset or project co-located with land-use development
- Partnership opportunities for public, private, and/or non-profit development
- Promoted by FTA



# OCTA's Joint Development Policies

- Last major update in 2016
  - Reaffirmed in 2019
- Support transit by encouraging:
  - Projects on OCTA-owned properties along OCTA transit routes
  - Office, commercial, residential, and other uses
  - Safety, convenience, accessibility, environmental/air quality, and economic benefits
- Conduct feasibility studies for potential development proposals





# Fullerton Park and Ride Facility

- Located north of I-5/SR-91 interchange
- 11.1-acre site
  - 745 public parking spaces
  - 14 bus docks and eight bus routes
  - Various station amenities
  - OCTA and LA Metro operations
- Parking utilization
  - Peaks at 55 percent on weekdays
  - 20 percent on weekends



I-5 – Interstate 5

SR-91 – State Route 91

LA Metro – Los Angeles County Metropolitan Transportation Authority

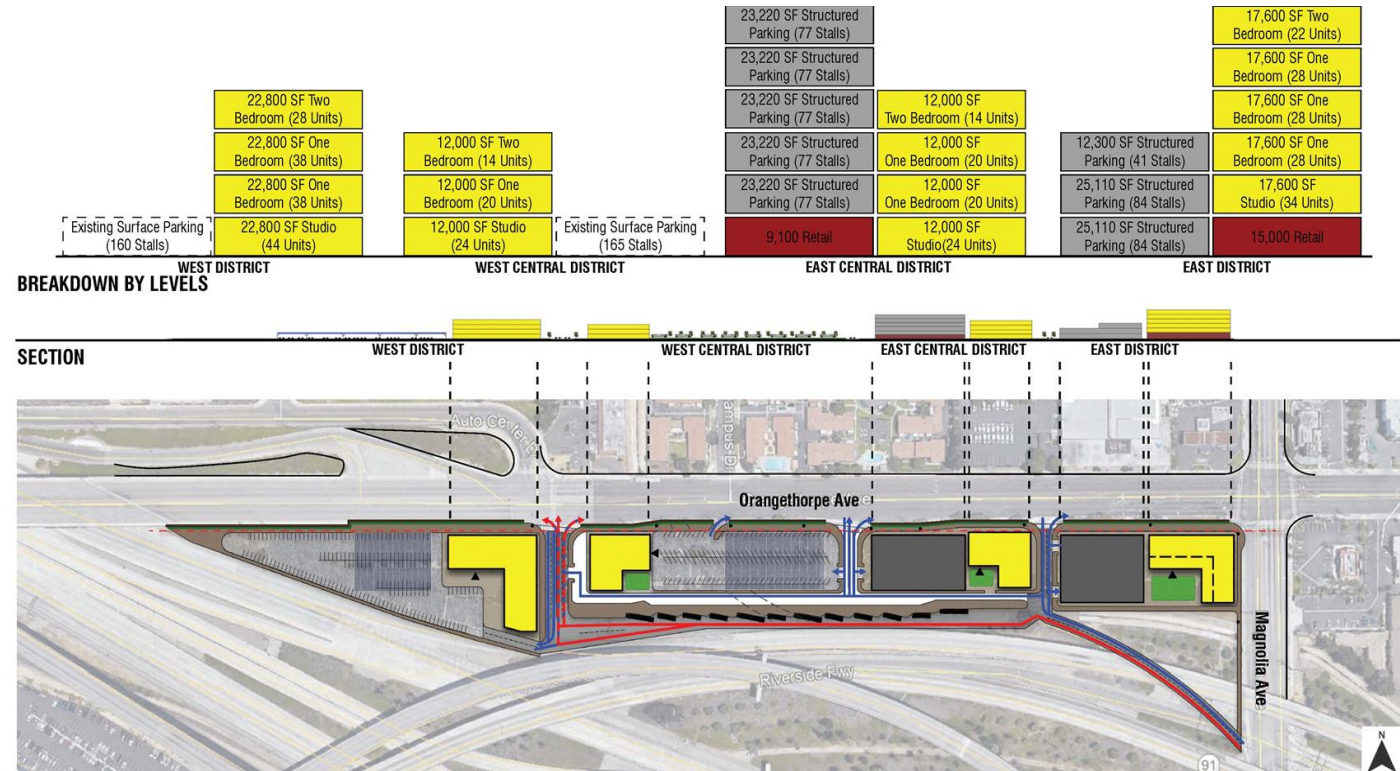
# Site Opportunities and Constraints

- Opportunities
  - Over 300 spaces (45 percent) of excess capacity
  - Large site
  - Good access and visibility
  - Nearby land uses compliment commercial and residential opportunities
- Constraints
  - Confined site
  - Potential noise, sight, and air quality concerns



# Development Concepts

- Analyzed various:
  - Land-use mixtures
  - Housing types
  - Site layouts
  - Densities
- Included pro forma reports
- Explored physical, financial, and operational possibilities





# Findings

- Joint development is feasible and could provide significant value
- Projects with no or limited structured parking perform well

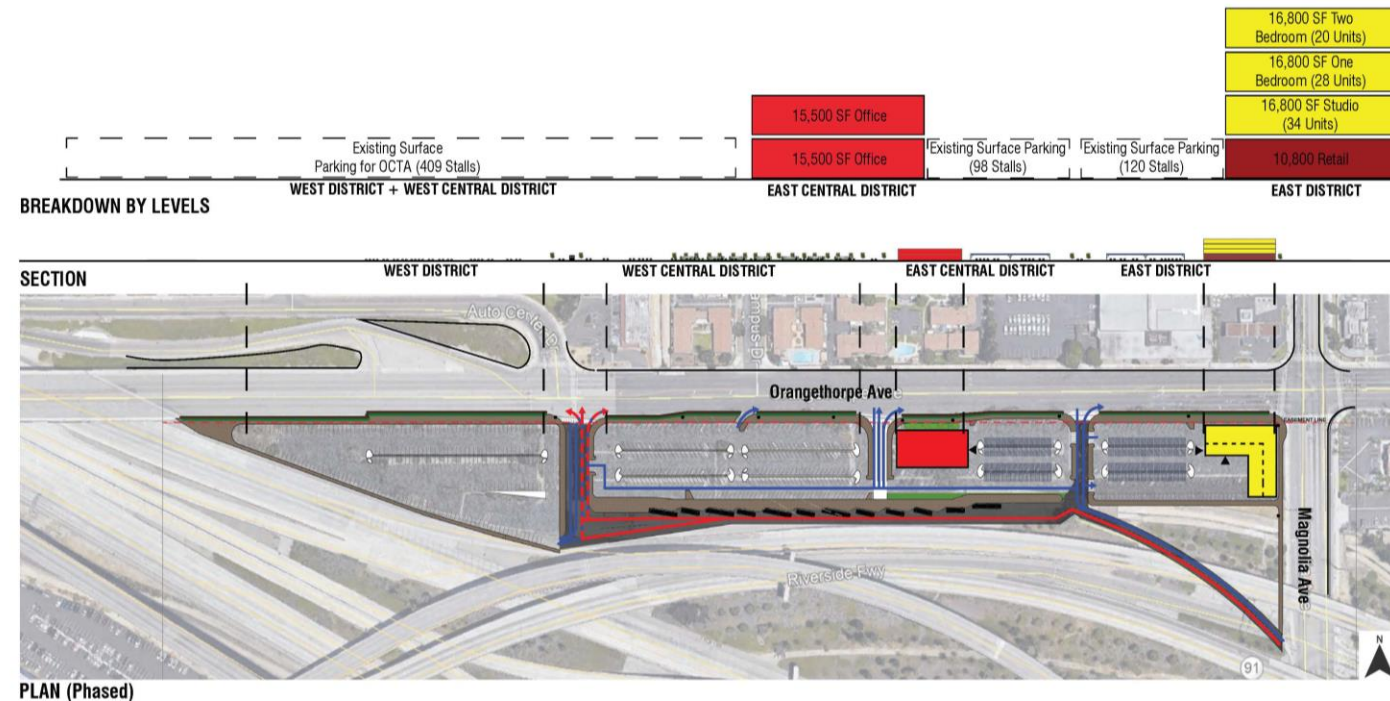




# Phased Option

- Leverages existing surface parking supply
- Attractive ROI for developer
- Immediate ROI for OCTA at no cost
- Improves:
  - Transit propensity
  - Land value
  - Community appeal
  - User experience

ROI – Return on Investment



# Next Steps

- Seek funding for Phase 2 study
  - Continue coordination with City of Fullerton
  - Develop site-specific goals
  - Create a stakeholder strategy and gauge potential partnerships
  - Potential RFI and/or RFP
- Current economic outlook and the novel coronavirus (COVID-19) may not impact potential benefits
  - New development programs, tax breaks, or other actions could improve development viability



**June 11, 2020**

**To:** Transit Committee

**From:** Darrell E. Johnson, Chief Executive Officer

**Subject:** Zero-Emission Bus Rollout Plan

### **Overview**

The Orange County Transportation Authority has developed a draft plan to comply with the California Air Resources Board's Innovative Clean Transit regulation. The regulation requires transit agencies to gradually transition to a 100 percent zero-emission bus fleet by 2040, by phasing in the purchase of zero-emission buses as part of future bus procurements beginning in 2023. The regulation also requires transit agencies to submit a Zero-Emission Bus Rollout Plan and an accompanying resolution to the California Air Resources Board by July 1, 2020.

### **Recommendations**

- A. Direct staff to finalize the Zero-Emission Bus Rollout Plan and submit a final report to the California Air Resources Board as required for compliance purposes.
- B. Adopt Orange County Transportation Authority Resolution No. 2020-055 authorizing the Chief Executive Officer, or designee, to authorize the submittal of the Zero-Emission Bus Rollout Plan to the California Air Resources Board as required by the Innovative Clean Transit regulation.
- C. Direct staff to continue battery-electric and hydrogen fuel-cell electric bus pilot projects and return with periodic performance reports that will be used for future plan updates.

### **Background**

The California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation in December 2018, as part of a long-term goal of transitioning the transportation sector to zero-emission technologies. Under the ICT regulation, a zero-emission bus (ZEB) is defined as a bus without any tailpipe emissions and is either battery-electric or hydrogen fuel-cell electric. The regulation applies to all revenue vehicles with a gross vehicle weight rating

over 14,000 lbs., either directly operated by a transit agency or under contract.

This impacts the entire Orange County Transportation Authority (OCTA) fixed-route and paratransit fleet. OCTA and the California Transit Association expressed concerns to CARB during the rule development that the increased cost of ZEB vehicles, fuel, and infrastructure will impact the ability of transit agencies to provide current levels of service without the addition of new funding. OCTA is actively seeking grants to help offset a portion of the increased costs and the State of California is arranging bulk purchase agreements for ZEBs to reduce per-vehicle costs.

The main provisions of the regulation include:

- Transit agencies which operate a fleet larger than 100 buses are required to submit a ZEB Rollout Plan (Rollout Plan) by July 1, 2020;
- Transit agencies must purchase a minimum number of ZEBs during future procurements, according to the following schedule:
  - Starting in 2023, 25 percent of new bus purchases must be ZEBs (applies to 40-foot buses only),
  - Starting in 2026, 50 percent of all new bus purchases must be ZEBs (40-foot, 60-foot, and smaller “cutaway” buses typically used for paratransit service),
  - Starting in 2029, 100 percent of all new bus purchases must be ZEBs;
- Transit agencies can earn credits to offset the 2023 and 2026 ZEB purchase requirements by purchasing certain ZEBs prior to 2023 or by providing zero-emission vehicles not covered by the ICT regulation; and
- The minimum ZEB purchase requirement may be delayed if a certain number of ZEBs are purchased statewide by the end of 2020 and 2021.

The OCTA Fiscal Year 2019-20 Budget includes two procurements for vehicles which will have met their minimum federal useful life and are not subject to the ICT regulation because they are being purchased prior to 2023. These include portions of the compressed natural gas (CNG) fixed-route bus fleet and gasoline paratransit bus fleet.

### ***Discussion***

Transitioning to ZEBs will take careful planning and require additional infrastructure and financial resources to implement. OCTA is taking a measured approach to meeting the regulation, while prioritizing the delivery of transit service to our customers.



### Rollout Plan Development

To successfully transition to an all ZEB fleet by 2040, each large transit agency is developing a Rollout Plan demonstrating how it will procure ZEBs, perform an assessment of the necessary fueling infrastructure, and train coach operators and mechanics to operate and/or maintain the buses. CARB allows transit agencies to update the Rollout Plan as necessary. Additionally, if an agency is adversely affected or unable to meet the ZEB purchase mandates, the ICT regulation allows agencies to apply for exemptions for circumstances outside an agency's control. This Rollout Plan must be approved by the OCTA Board of Directors (Board) prior to the submittal to CARB and it is understood that the Rollout Plan will be updated as bus technologies evolve, and market conditions change. The draft Rollout Plan is included as Attachment A and includes the following elements:

- Type(s) of ZEB technologies best suited for OCTA's transit service,
- Schedule for all ZEB and conventional bus purchases,
- Schedule for infrastructure upgrades and modifications,
- Identification of costs and potential funding sources,
- Plan to deploy ZEBs in disadvantaged communities,
- Training plan for operators and maintenance staff, and
- Attainment of full transition to ZEBs by 2040.

To develop the Rollout Plan, OCTA retained professional consultant assistance with expertise in vehicle technology, fueling infrastructure, and transit operations. The two main roles of the consultant were to model OCTA's existing routes for ZEB compatibility and develop recommended technology scenarios for consideration. It is important to note that this work began prior to the novel coronavirus (COVID-19) pandemic and is based on transit service levels provided during fall 2019. Further, OCTA can likely adjust service planning parameters to make best use of the available technologies as more information become available. Moreover, the Rollout Plan will be updated as transit service levels and fleet requirements are adjusted in response to demand.

### Route Modeling and Vehicle Technology Options

The consultant team gathered data from OCTA, ZEB manufacturers, and energy companies to use as input to their analysis. Vehicle range and cost are key factors in determining the most appropriate fuel technology. There are currently two types of ZEB technologies to consider: hydrogen fuel-cell electric buses (FCEB) and battery-electric buses (BEB).

Detailed route modeling indicated that many OCTA vehicle shifts are too long for BEB technology that is currently available without charging the buses at the ends

of the route or mid-route. OCTA can service the current routes using FCEBs because of their extended range. As the technologies evolve, and OCTA re-examines how transit routes are operated, OCTA could amend the Rollout Plan over time. For this initial submittal, various technology mix scenarios were modeled, including a 100 percent FCEB fleet and a mixed-fleet consisting of FCEBs and BEBs with depot and on-route charging. The 100 percent FCEBs scenario showed a slightly lower overall cost than the mixed technology fleet given current vehicle, fuel, and support infrastructure pricing. Consultant findings indicated that FCEBs offer an extended range and better match to OCTA's current operating parameters. In comparison, the current range of BEBs may require more vehicles and drivers to meet similar service levels. The consultant also assessed infrastructure needs by energy type and how feasible it would be to implement at each OCTA base. General BEB operations would require cooperation from other agencies to install charging infrastructure along bus routes, making operation more complicated and potentially affecting service reliability. Additional detail on the trade-offs between technology scenarios is included in Attachment B.

Based on the results of the consultant analysis, the Rollout Plan focuses on using FCEBs for fixed-route operation, with some depot-charged BEBs at the Garden Grove Base. Further, based on current vehicle availability, staff is assuming that all paratransit vehicle purchases will need to be depot-charged BEB starting in 2026, though additional analysis of this fleet is underway to determine the best long-term, vehicle type to use for the service. These vehicle technology findings are included in the draft plan; however, specific Board action would still be required to approve vehicle purchases and fueling infrastructure improvements. Vehicle technology types may need to be updated in the future based on operating experience and changes in costs and technology. OCTA will be testing both ten battery-electric and hydrogen fuel-cell electric buses over the next few years as part of a pilot project to gain experience with each technology.

### Cost Impacts

The transition to ZEBs will have a substantial cost compared to OCTA continuing to operate existing fuel types. The per-unit vehicle costs for ZEBs are higher, and OCTA will need to install new fueling infrastructure at a significant cost. The draft Rollout Plan attempts to keep the lowest overall cost for OCTA through this transition. The Rollout Plan achieves this by continuing to operate existing fuel technologies as long as allowable and implementing the lowest-cost ZEB vehicles based on the total cost of ownership. The costs for vehicles, fuel, and infrastructure may change over time. Breakthroughs in battery technology may make BEBs less expensive, and a lower cost to produce hydrogen would make FCEBs less expensive. The Rollout Plan proposed is based on what is currently known about each technology and the associated costs. The long-term cost impacts will be evaluated in the next version of the OCTA Comprehensive

Business Plan based on the technology assumptions in the Rollout Plan. The financial planning work will help OCTA better understand the long-term cost and how it may impact the level of transit services that is sustainable.

### Short-Term Recommendations

OCTA will be testing both types of ZEBs over the next few years. Ten FCEBs were purchased and put into service in late 2019. A hydrogen fueling station was also constructed at the Santa Ana Bus Base to fuel the new buses. OCTA received “early action credits” for purchasing fuel-cell buses prior to 2023, which can be used to offset future ZEB purchase requirements partially. Staff has also initiated the procurement process for ten BEBs, which were included in the OCTA Fiscal Year 2019-20 Budget. Infrastructure necessary for electric charging will be installed at the Garden Grove Bus Base. External funding from state and federal grants has helped offset the cost differential between the new technologies when compared to the standard CNG bus. With a combination of ten FCEBs and ten BEBs, OCTA will gain valuable experience with both ZEB technologies in the local operating environment. This will support an informed decision about a long-term fueling strategy, as well as position OCTA to meet the ICT regulation during each stage of technology transition.

In addition to the procurement of ten BEBs, the Board recently approved two procurements: the purchase of up to 299 CNG buses and the purchase of up to 117 cutaway paratransit buses, given maximum useful life considerations. With the ongoing procurements of buses and the ZEB pilots underway, OCTA is well positioned to allow the ZEB technologies to mature and identify the appropriate fueling technology and meet the ICT regulation. OCTA does not need to purchase ZEBs for fixed-route service until 2029, when 20, 60-foot articulated buses are due for replacement, as shown on the vehicle replacement schedule in Attachment C. At that time, per the ICT regulation, 100 percent of the vehicles purchased would have to be ZEBs. Staff is assuming that all paratransit vehicle purchases will need be depot-charged BEBs starting in 2026. A study is underway to analyze the optimal paratransit fleet mix and assess viability of using more smaller and more economical vehicles rather than cutaways. The result of this study will inform OCTA on the type and size of vehicles to purchase, as well as fueling technology.

### ***Summary***

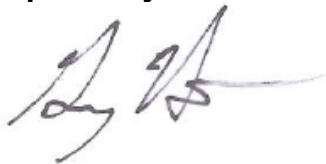
OCTA has developed a draft Rollout Plan recommending how to best comply with the CARB ICT regulation. Pilot projects will help inform the decision on which type of ZEBs will work best for OCTA in the long-term. A consultant effort helped OCTA develop a plan to satisfy CARB's ICT regulation. The Rollout Plan will assist OCTA to adopt an initial ZEB implementation strategy, and CARB gives agencies the ability to update it in future years as needed. Staff is

requesting Board approval of the draft Rollout Plan and the accompanying resolution (Attachment D) prior to submitting it to CARB by July 1, 2020.

***Attachments***

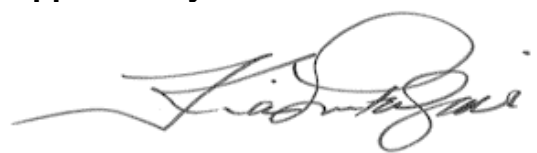
- A. Orange County Transportation Authority, Zero-Emission Bus Draft Rollout Plan, Revised: June 3, 2020
- B. Stantec, Fleet Fit Trade-Off Considerations
- C. Vehicle Purchase Outlook, Fixed-Route Bus Purchases
- D. Resolution No. 2020-055 of the Board of Directors of the Orange County Transportation Authority, Zero-Emission Bus Rollout Plan

**Prepared by:**



Gary Hewitt  
Section Manager, Transit Planning  
(714) 560-5715

**Approved by:**



Kia Mortazavi  
Executive Director, Planning  
(714) 560-5741





# ORANGE COUNTY TRANSPORTATION AUTHORITY

## Zero-Emission Bus Draft Rollout Plan

Revised: June 3, 2020

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## **SECTION A: TRANSIT AGENCY INFORMATION**

*Please provide the following information regarding your agency.*

Orange County Transportation Authority (OCTA)  
550 South Main Street  
Orange, CA 92863

OCTA is part of South Coast Air Quality Management District (AQMD) and part of South Coast Air Basin.

Peak Vehicles: 421  
Population: 3,268,084

### Contact Information

Name: Darrell E. Johnson  
Title: Chief Executive Officer  
Phone Number: (714) 560-5343  
Email address: [djohnson@octa.net](mailto:djohnson@octa.net)

OCTA is not part of a Joint Zero-Emission Bus Group.

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## **Section B: Rollout Plan General Information**

*Does your transit agency's Rollout Plan have a goal of full transition to zero-emission technologies by 2040 that avoids early retirement of conventional transit buses? Yes*

*The ICT regulation requires 100% ZEB purchases in 2029. Conventional transit buses that are purchased in 2028 could be delivered in or after 2029. Please explain how your transit agency plans to avoid potential early retirement of conventional buses in order to meet the 2040 goal. OCTA will adhere to the FTA fleet retirement requirements.*

*When did your transit agency's board or governing body approve the Rollout Plan?*

Approval date 06/22/2020

Resolution No. 2020-055

*Is a copy of the Board-approved resolution attached to the Rollout Plan submitted to CARB? Yes*

*Contact information for follow-up on details of the Rollout Plan*

Contact name: Jorge Duran

Title: Service Planning Analyst, Principal

Phone number: (714) 560-5765

Email: [jduran@octa.net](mailto:jduran@octa.net)

*Who created the rollout plan? OCTA staff with consultant's assistance*

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## **Section C: Technology Portfolio**

*What type(s) of zero-emission bus technologies (e.g. battery electric and fuel cell electric buses) does your transit agency plan to deploy through 2040?*



OCTA began to deploy fuel cell electric buses (FCEB) in late 2019 and early 2020 and plans to deploy battery electric buses (BEB) in 2023 as pilot projects. Per ICT Regulation, the Rollout Plan presents a strategy for how the agency plans to deploy ZEBs through 2040. As such, it is a living document that will be updated as technology evolves. At this time, our extensive modeling shows that FCEB is the best fit for OCTA's operational needs. The optimal fleet mix will evolve as ZEB technology advances in the short and long-term. OCTA will be conducting pilots to test ten FCEBs and ten BEBs to inform the final decision and long-term ZEB strategy.





OCTA does not need to purchase ZEBs for fixed-route until 2029 when twenty 60-foot articulated buses are due for replacement, as shown in Table 2a in Section D. At that time, per the ICT regulation, 100 percent of the vehicles purchased would have to be ZEBs. OCTA will need to purchase ZEBs for the paratransit fleet in 2026, when 50 percent of the vehicles must be ZEBs, as shown in Table 2b in Section D. The current assumption is that the ZEB fuel type would be battery-electric and that an Altoona-tested vehicle exists. A study is underway to analyze the optimal paratransit fleet mix. The result of this study will inform OCTA on the type and size of vehicles to purchase, as well as fueling technology and when Altoona testing has been conducted on this vehicle type.







The table on the following page summarizes the options analyzed that helped OCTA develop a ZEB transition strategy for its fixed-route fleet.







## Fleet Fit Trade-Off Qualitative Considerations for General Criteria (Agency-wide)

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
Scheduling and planning	<ul style="list-style-type: none"> <li>Requires scheduling consideration for FCEB <b>average</b> range of ~280 mi (37.5 kg tank) and 365 mi (50 kg tank)</li> <li>FCEBs offer greatest flexibility for detours and other unplanned/planned service changes and road calls/changeouts</li> <li>Two to three buses with FCEBs (50 kg tanks) may require midday refueling (depending on operating conditions) to complete service as currently blocked/scheduled</li> <li>One block will need redesigning</li> <li>Smaller battery pack in FCEBs experience less degradation than BEBs so that operating range decreases are less significant over time, making service planning more consistent and with fewer variables to consider</li> </ul> 	<ul style="list-style-type: none"> <li>Requires scheduling consideration for FCEB <b>average</b> range of ~280 mi (37.5 kg tank) and 365 mi (50 kg tank)</li> <li>Requires scheduling consideration for BEB (400+ kWh battery models) <b>average</b> range of ~160-180 mi</li> <li>Requires consideration of mixed fleet to ensure that appropriate units are scheduled for appropriate blocks/services</li> <li>Two to three buses with FCEBs (50 kg tanks) may require midday refueling (depending on operating conditions) to complete service as currently blocked/scheduled</li> <li>One block will need redesigning</li> <li>Smaller battery pack in FCEBs experience less degradation than BEBs so that operating range decreases are less significant over time</li> <li>Degradation of BEB batteries can significantly decrease the operating range over time, adding complexity to service redesign</li> </ul> 	<ul style="list-style-type: none"> <li>FCEB range most closely approximates to current CNG range</li> <li>FCEB most closely resembles current CNG "business as usual" scenario at OCTA</li> <li>Leverages OCTA's experience with FCEBs</li> <li>Option A presents the simplest scheduling considerations and minimizes reblocking</li> <li>Bravo service would require particular attention if Bravo-branded buses are of only one type of technology and this would increase the bus variants required in Option B (2 service types, OCBus and Bravo, x3 technologies, vs. 2 service types and x1 technology in Option A)</li> </ul>

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
Operations and dispatching	<ul style="list-style-type: none"> <li>All units can be dispatched for nearly any service or block</li> <li>Dispatch will have greater flexibility to assign units to blocks because of comparable ranges across vehicles, which will maintain a comparable yearly mileage among FCEBs</li> <li>Refueling hydrogen on FCEBs can be completed during a 7-hr refueling window as currently done for CNG buses (hydrogen fueling station equipment designed to fill FCEBs in under 10 minutes, as per peer agency experience)</li> <li>Fueling, cleaning, and maintenance and other service cycle functions would require minimal changes for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Dispatch (and maintenance) will need to consider and manage two technologies when buses leave and return to the garages, as well as different ranges to ensure units are dispatched as scheduled to the correct blocks</li> <li>Bus assignment between blocks will be limited due to driving range of BEBs, resulting in fewer accumulated yearly mileage than FCEBs</li> <li>Fueling, cleaning, maintenance and other service cycle functions will require modification for BEBs</li> <li>Parking and charging times for BEBs needs to be closely monitored to ensure a full state of charge and free dispatching for the next service day</li> <li>Recharging BEBs can take between two and six hours and will likely require swapping dispensers' connections to buses overnight or smart charging software to manage charge remotely</li> <li>Refueling hydrogen on FCEBs can be completed during a 7-hr refueling window as currently done for CNG buses (hydrogen fueling station equipment designed to fill FCEBs in under 10 minutes, as per peer agency and OCTA experience)</li> <li>Fueling, cleaning, and maintenance and other service cycle functions would require minimal to no change for changes for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Having the fewest variants or types of bus technologies is preferable especially given OCTA's multiple service types</li> <li>Operations and dispatching of FCEBs will be closer to OCTA's business as usual and comparable to operations of CNG buses</li> <li>Leverages operations' and dispatching's experience with FCEBs</li> <li>Managing charging of BEBs adds to the operational activities of OCTA's staff and would likely result in additional personnel and shift modifications</li> </ul>
Training and agency-wide adoption	<ul style="list-style-type: none"> <li>Requires training for operators, mechanics, schedulers, etc. for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Requires training for operators, mechanics, schedulers, etc. for BEBs</li> <li>Requires training for operators, mechanics, schedulers, etc. for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Option A presents a less steep learning curve than Option B because it recommends one technology type rather than two</li> <li>Option A leverages existing in-house expertise and experience with FCEBs</li> </ul>

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
Technology availability/OEMs/procurement	<ul style="list-style-type: none"> <li>Fewer FCEB OEMs at present</li> <li>Procurement would require one procurement contract/process</li> <li>Requires one set of spare parts, tools, etc. for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>More BEB OEMs</li> <li>Fewer FCEB OEMs at present</li> <li>Procurement would require two separate procurements contracts</li> <li>Requires two sets of spare parts, tools, etc. for BEBs and FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Option A relies on FCEBs solely, and there are fewer OEMs available than for BEBs</li> <li>Option A would require fewer tools and spare parts than Option B</li> </ul>
Service area-specific considerations	<ul style="list-style-type: none"> <li>OCTA has a relatively compact service area (435 sq. mi.) with hills and several routes with cruising (i.e., freeway-type) portions</li> <li>FCEBs provide flexibility to short and long routes, but special planning for hilly routes</li> </ul> 	<ul style="list-style-type: none"> <li>OCTA has relatively compact service area (435 sq. mi.) with hills and several routes with cruising (i.e., freeway-type) portions</li> <li>FCEBs provide flexibility to short and long routes, but special planning for hilly routes</li> <li>BEBs could provide better fuel economy on stop-and-go (urban) services</li> <li>Installation of on-route chargers require permitting and buy-in from project jurisdiction</li> </ul> 	<ul style="list-style-type: none"> <li>Option A provides the most flexibility for all OCTA services</li> <li>Option B requires coordination for on-route charging infrastructure with different jurisdictions in Orange County</li> </ul>
Total cost of ownership	<ul style="list-style-type: none"> <li>Estimated TCO is \$2.05 per mile (per bus) over 18 years</li> </ul> 	<ul style="list-style-type: none"> <li>Estimated TCO at \$2.07 per mile (per bus) over 18 years</li> </ul> 	<ul style="list-style-type: none"> <li>Hydrogen infrastructure becomes comparable to BEBs in cost with unit discount for large purchases</li> <li>TCO estimates include capital investment for infrastructure and bus acquisition, operational considerations like maintenance and fuel cost, and mid-life battery or FC replacement. The TCO per mile for Option B is 1% lower than for Option A.</li> <li>Initial upfront capital cost of Option B is 9% lower than Option A</li> <li>From an O&amp;M life cycle perspective, Option B is 12% more expensive overall relative to Option A.</li> </ul>

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
Other	<ul style="list-style-type: none"> <li>Power resiliency requires diesel or CNG generator for FCEB fueling infrastructure</li> <li>Deviation from modeled fuel efficiency of FCEBs can be mitigated by additional refueling during the day either at an OCTA garage or by arranging fueling contracts with public hydrogen stations currently expanding across California</li> </ul> 	<ul style="list-style-type: none"> <li>Power resiliency requires diesel or CNG generator for BEB and FCEB fueling infrastructure</li> <li>Range requirements could be accommodated by midday fueling of FCEBs with municipal or shared infrastructure</li> <li>Range requirements for BEBs would require in-depot charging for several hours, either during the day or overnight</li> <li>Deviation from the modeled fuel efficiency when operating buses under real operations can be disruptive for BEBs and could represent adding additional buses to complete service</li> </ul> 	
Overall fit for OCTA			



## **Section D: Current Bus Fleet Composition and Future Bus Purchases**

*Please complete Table 1 with information on each individual bus in your current bus fleet. Please identify the fuel type of each individual conventional bus as diesel, compressed natural gas (CNG), liquefied natural gas (LNG), diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline.*

**Table 1: Current Bus Fleet Composition**

<b><u>Bus Series</u></b>	<b><u>Bus Type</u></b>	<b><u>Fuel Type</u></b>	<b><u>Model Year</u></b>	<b><u>QTY</u></b>
5121-50	Standard	CNG	2007	30
5501-99	Standard	CNG	2007	99
5601-74	Standard	CNG	2007	74
5675-78	Standard	CNG	2008	4
7501-28	Standard	CNG	2007	28
7529-92	Standard	CNG	2008	64
7601-20	Articulated	CNG	2013	20
5701-99	Standard	CNG	2016	99
5801-58	Standard	CNG	2016	58
7621-36	Articulated	CNG	2016	16
5861-5866	Standard	CNG	2018	6
1111-20	Standard	FCEB	2019	10
6805/06	Cutaway	UNL	2010	2
6911-27	Cutaway	UNL	2013	17
8501-99	Cutaway	UNL	2014	98
8601-99	Cutaway	UNL	2016	99
8701-33	Cutaway	UNL	2016	32
Total				756

*Please complete Table 2 regarding expected future bus purchases, including the number of buses in total expected to be purchased or leased in the year of purchase. Identify the number and percentage of ZEBs of the total bus purchases each year, as well as bus types and fuel types. Identify the same type of information for purchases of conventional buses. Bus types include standard, articulated, over-the-road, double decker, and cutaway buses. For zero-emission technologies, identify the fuel type as hydrogen or electricity and the type of charging technology (depot, wireless, and/or on-route). For conventional technologies identify the fuel type as diesel, CNG, LNG, diesel hybrid (dHEB), gasoline hybrid (gHEB), propane, or gasoline.*

Table 2a illustrates the anticipated fixed route buses that will be purchased in the future and Table 2b depicts anticipated paratransit cutaway purchase schedule.

**Table 2a: Future Fixed Route Bus Purchases (Required)**

<u>Timeline (Year)</u>	<u>Total # of Buses to Purchase</u>	<u># of ZEB Purchases</u>	<u>% of Annual ZEB Purchases</u>	<u>ZEB Bus Type(s)</u>	<u>ZEB Fuel Type(s)</u>	<u># of Conv. Bus Purchases</u>	<u>% of Annual Conv. Bus Purchases</u>	<u>Type(s) of Conv. Buses</u>	<u>Fuel Type(s) of Conv. Buses</u>
2020	304	10	3%	Standard	BEB	294	97%	Standard	CNG
2021	0	0	-	-	-	0	-	-	-
2022	0	0	-	-	-	0	-	-	-
2023	0	0	-	-	-	0	-	-	-
2024	0	0	-	-	-	0	-	-	-
2025	0	0	-	-	-	0	-	-	-
2026	0	0	-	-	-	0	-	-	-
2027	0	0	-	-	-	0	-	-	-
2028	0	0	-	-	-	0	-	-	-
2029	20	20	100%	Articulated	FCEB	0	0%	-	-
2030	0	0	-	-	-	0	-	-	-
2031	0	0	-	-	-	0	-	-	-
2032	157	157	100%	Standard	FCEB/BEB	0	0%	-	-
	16	16	100%	Articulated	FCEB	0	0%	-	-
2033	0	0	-	-	-	0	-	-	-
2034	6	6	100%	Standard	FCEB	0	0%	-	-
2035	10	10	100%	Standard	FCEB	0	0%	-	-
2036	0	0	-	-	-	0	-	-	-
2037	0	0	-	-	-	0	-	-	-
2038	304	304	100%	Standard	FCEB	0	0%	-	-
2039	0	0	-	-	-	0	-	-	-
2040	0	0	-	-	-	0	-	-	-

*Note: Purchase date is two years prior to required for service to allow for procurement and manufacturing*

**Table 2b: Future Paratransit Cutaway Bus Purchases (Required)**

<u>Timeline (Year)</u>	<u>Total # of Buses to Purchase</u>	<u># of ZEB Purchases</u>	<u>% of Annual ZEB Purchases</u>	<u>ZEB Bus Type(s)</u>	<u>ZEB Fuel Type(s)</u>	<u># of Conv. Bus Purchases</u>	<u>% of Annual Conv. Bus Purchases</u>	<u>Type(s) of Conv. Buses</u>	<u>Fuel Type(s) of Conv. Buses</u>
2020	116	0	0%	Cutaway	-	116	100%	Cutaway	Unleaded
2021	3	0	0%	Cutaway	-	3	100%	Cutaway	Unleaded
2022	133	0	0%	Cutaway	-	133	100%	Cutaway	Unleaded
2023	3	0	0%	Cutaway	-	3	100%	Cutaway	Unleaded
2024	2	0	0%	Cutaway	-	2	100%	Cutaway	Unleaded
2025	5	0	0%	Cutaway	-	5	100%	Cutaway	Unleaded
2026	5	3	60%	Cutaway	BEB	2	40%	Cutaway	Unleaded
2027	122	61	50%	Cutaway	BEB	61	50%	Cutaway	Unleaded
2028	5	3	60%	Cutaway	BEB	2	40%	Cutaway	Unleaded
2029	136	136	100%	Cutaway	BEB	0	0%	-	-
2030	6	6	100%	Cutaway	BEB	0	0%	-	-
2031	5	5	100%	Cutaway	BEB	0	0%	-	-
2032	7	7	100%	Cutaway	BEB	0	0%	-	-
2033	7	7	100%	Cutaway	BEB	0	0%	-	-
2034	125	125	100%	Cutaway	BEB	0	0%	-	-
2035	8	8	100%	Cutaway	BEB	0	0%	-	-
2036	139	139	100%	Cutaway	BEB	0	0%	-	-
2037	9	9	100%	Cutaway	BEB	0	0%	-	-
2038	8	8	100%	Cutaway	BEB	0	0%	-	-
2039	10	10	100%	Cutaway	BEB	0	0%	-	-
2040	0	0	0%	-	-	0	0	-	-

*Note: Purchase date is one year prior to required for service to allow for procurement and manufacturing*

*Is your transit agency considering converting some of the conventional buses in service to zero-emission buses? OCTA is not considering converting conventional buses to zero-emission buses.*

## **Section E: Facilities and Infrastructure Modifications**

*Please complete Table 5 with names, locations, and main functions of transit agency divisions or facilities that would be involved in deploying and maintaining zero-emission buses. Please limit the facilities to bus yards and facilities with maintenance, fueling, and charging functions, and exclude other operational functions like training centers, information and trip planning offices, and administrative buildings.*

OCTA will have to make modifications to its divisions to accommodate the transition to zero-emission. Below is a table that identifies possible facilities and infrastructure modifications.

**Table 5: Facilities and Infrastructure Modifications Timeline (Required)**

<b><u>Division/ Facility Name</u></b>	<b><u>Address</u></b>	<b><u>Main Function(s)</u></b>	<b><u>Type(s) of Infrastructure</u></b>	<b><u>Service Capacity (Buses)</u></b>	<b><u>Needs Upgrade? (Yes/No)</u></b>	<b><u>Estimated Construction Timeline</u></b>
<b>Anaheim Base</b>	1717 E. Via Burton, Anaheim, CA 92806	Bus Operations & Maintenance	New hydrogen fueling station & dispensers, new gas detection system and site improvements.	150	Yes	Beginning in 2030 – about 2 years prior to arrival of first ZEBs at this base
<b>Garden Grove Base</b>	11800 Woodbury Road, Garden Grove, CA 92843	Bus Operations & Maintenance	New hydrogen fueling station & dispensers, new gas detection system, new battery electric infrastructure, and site improvements	150	Yes	Beginning in 2021, about 2 years prior to arrival of first BEBs at this base
<b>Irvine Base</b>	14736 Sand Canyon Road, Irvine, CA 92618	Bus Operations & Maintenance	New hydrogen fueling station & dispensers, new gas detection system and site improvements.	125	Yes	Beginning in 2030 – about 2 years prior to arrival of first ZEBs at this base
<b>Irvine Construction Circle Base</b>	16281 Construction Circle, Irvine, CA 92606	Bus Operations & Maintenance	Unknown at this time but may require new battery electric infrastructure, and site improvements	250	Yes	Beginning in 2024, about 2 years prior to arrival of first BEBs at this base
<b>Santa Ana Base</b>	4301 W. MacArthur Blvd., Santa Ana, CA 92704	Bus Operations & Maintenance	Expand hydrogen fueling station & dispensers and site improvements	245	Yes	FCEB infrastructure is operational at this base. Will need to expand beginning in 2030 – about 2 years prior to arrival of additional ZEBs at this base

*Electric utilities in OCTA's service area are Southern California Edison (SCE) and the City of Anaheim.*



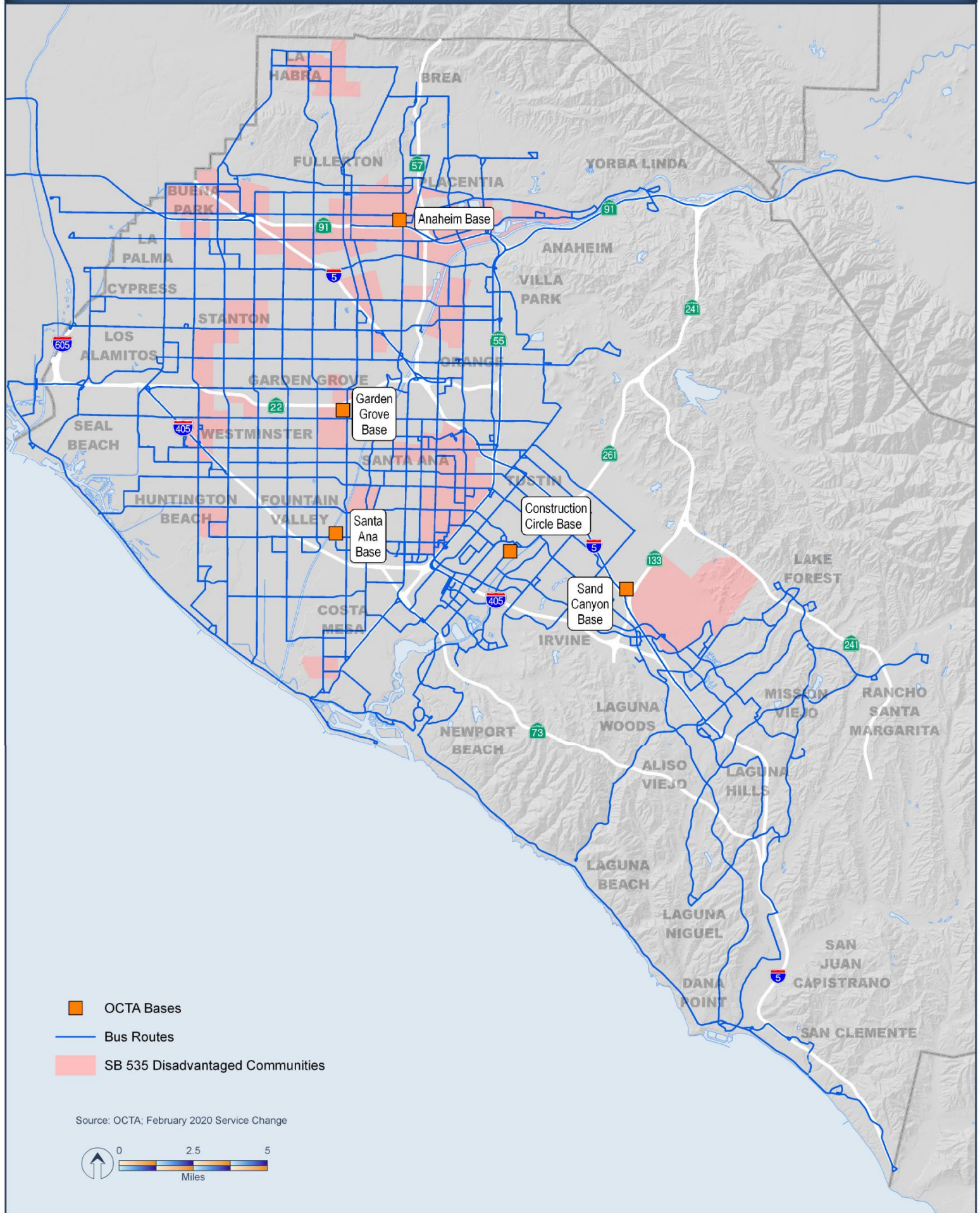
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## **Section F: Providing Service in Disadvantaged Communities**

*Does your transit agency serve one or more disadvantaged communities, as listed in the latest version of CalEnviroScreen?* Yes. OCTA does serve one or more disadvantaged communities as listed in the latest version of CalEnviroScreen.

The figure on the next page shows the disadvantaged communities in OCTA's service area as defined under the CalEnviroScreen definition. There are 71 disadvantaged communities (DACs) in Orange County, which account for about 12 percent of all census tracts. Analysis shows that all DACs are served with transit. Forty-seven OCTA routes touch at least one disadvantaged community. The routes primarily operate from OCTA's Santa Ana and Garden Grove bases. OCTA began deploying ZEBs in DACs with the initial FCEB pilot project in early 2020. The upcoming BEB pilot will also be deployed on primarily routes serving DACs. In general, the newer ZEBs will be assigned to routes serving low-income and minority communities per the agencies Fleet Assignment Policy.

# Zero Emission Bus Rollout Plan



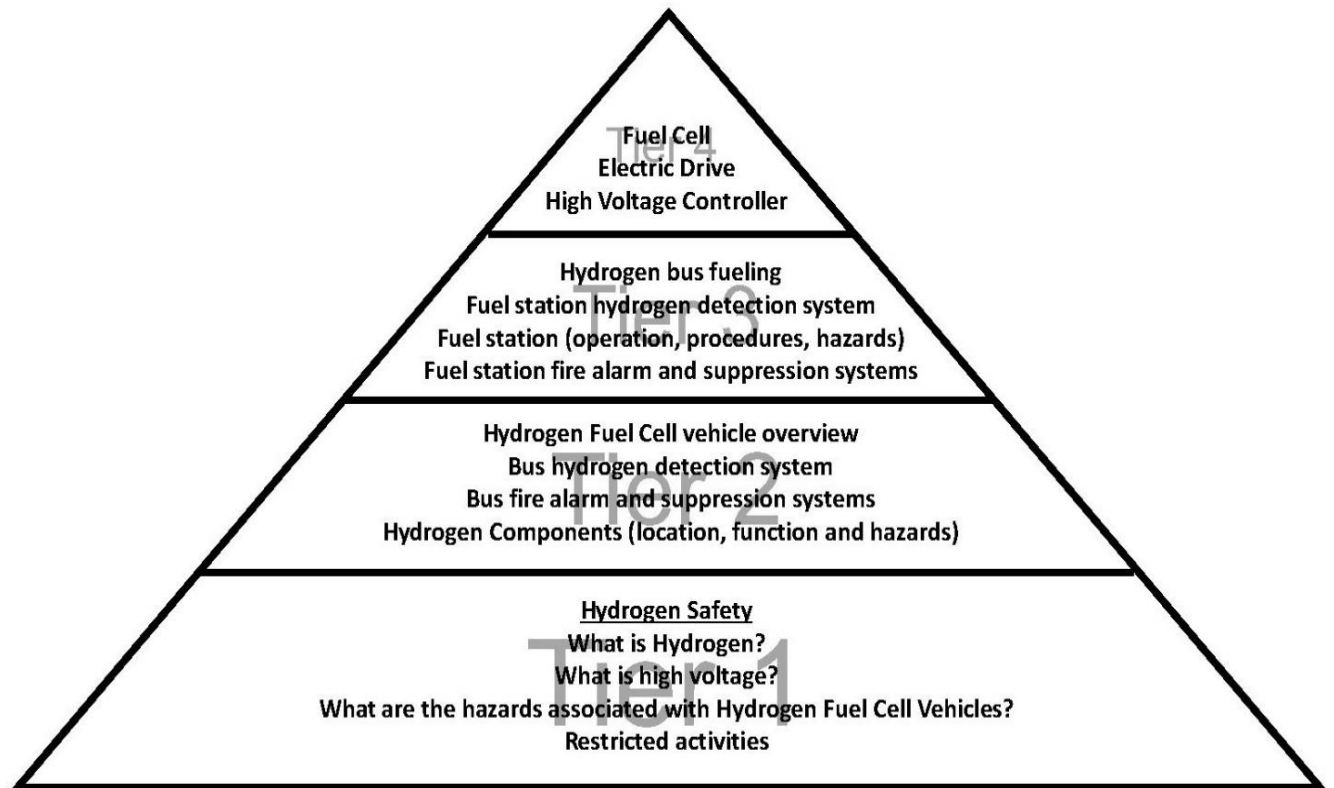
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## **Section G: Workforce Training**

*Describe your transit agency's plan and schedule for the training of bus operators and maintenance and repair staff on zero-emission bus technologies. (Required)*

OCTA is well prepared to transition its fleet to ZEBs with the experience gained from running two ZEB pilot projects. OCTA began operating FCEBs in revenue service with the acquisition of ten FCEBs in late 2019. OCTA also commissioned a hydrogen fueling station that can accommodate up to 50 buses and can easily be expanded. Staff across all disciplines have been trained in the operations and maintenance of the FCEB fleet. In addition, OCTA will begin the procurement of ten BEBs in late 2020. These BEBs are expected to be in revenue service in 2023, prior to when the ICT Regulation to purchase ZEBs kicks in.

Working closely with OEMs, OCTA developed and implemented a very successful training plan for the FCEB fleet. It is a four-tier plan that provides customized training across all levels of the organization. For training purposes, the training plan is designed as a triangle. The base of the pyramid being Tier 1 that describes the basics of the specific technology and includes staff throughout the entire organization. The top of the pyramid being Tier 4, is for a smaller number of personnel who directly work on the equipment or train staff on the technology. These tiers are explained below. This efficient training plan will be used as a model for the required training on the BEB fleet. It will be specifically customized to address BEB technology.



Tier 1: Involves all OCTA personnel who will have any contact with vehicles, fueling station, and service equipment, including the following staff:

- Operations - 658 total employees including staff and drivers.
- Operations support - 31 total employees including communications, field operations and planning.
- Maintenance - 200 total employees including staff, mechanics, service workers, and facilities technicians.
- Contract Administration & Materials Management - 25 total employees including staff and parts clerks.
- Training and Development - 19 total employees including instructors and support staff.
- Orange County Sheriff - 31 total employees including staff and officers.
- Total personnel initially requiring Tier 1 training – 964

Tier 2: Involves all OCTA personnel who will have daily contact with vehicles, fueling station, and service equipment, including the following staff.

- Operations - 633 drivers. (This number assumes all drivers are to be trained.)
- Operations support - 31 field operations employees.
- Maintenance - 200 employees including staff, mechanics, service workers, and facilities technicians.
- Training and Development - 19 total instructors.



Tier 3: Involves all OCTA personnel who are directly involved in service or repair of vehicles, fueling station, and service equipment.

- Maintenance - 200 total employees including staff, mechanics, service workers, and facilities technicians.
- Training and Development - 3 maintenance instructors.
- Total personnel initially requiring Tier 3 training - 203

Tier 4: Involves all OCTA personnel who are directly involved with the diagnosis or repair of Hydrogen Fuel Cell, high voltage, control, or bus electrical systems.

- Maintenance - 4 Advanced Tech mechanics.
- Training and Development - 3 maintenance instructors.

The table below provides a high-level overview of OCTA's plan and schedule for the training of all staff throughout the agency on ZEB technologies. This plan is subject to change based on financial, technological, and agency direction.

**Table 8: Workforce Training Schedule (Optional)**

<b>Timeline (year)</b>	<b>Maintenance/Technician Training</b>	<b>Operator Training</b>	<b>Other Staff Training</b>
<b>FY2020</b>	Conduct four-tier training for 10 FCEBs pilot project	Conduct four-tier training for 10 FCEBs pilot project	Conduct four-tier training for 10 FCEBs pilot project
<b>FY2021</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2022</b>	Conduct four-tier training for 10 BEBs pilot project	Conduct four-tier training for 10 BEBs pilot project at the Garden Grove Base	Conduct four-tier training for 10 BEBs pilot project
<b>FY2023</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2024</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2025</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2026</b>	Conduct four-tier training for initial delivery of ZEB paratransit fleet at Irvine Construction Circle Base	Conduct four-tier training for initial delivery of ZEB paratransit fleet at Irvine Construction Circle Base	Conduct four-tier training for initial delivery of ZEB paratransit fleet at Irvine Construction Circle Base
<b>FY2027</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2028</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2029</b>	Conduct four-tier training for expansion of ZEB fleet (20 articulated buses)	Conduct four-tier training for expansion of ZEB fleet (20 articulated buses)	Conduct four-tier training for expansion of ZEB fleet (20 articulated buses)
<b>FY2030</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2031</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2032</b>	Conduct four-tier training for significant expansion of ZEB fleet (157 40-ft and 16 articulated buses)	Conduct four-tier training for significant expansion of ZEB fleet (157 40-ft and 16 articulated buses)	As needed
<b>FY2033</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2034</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2035</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2036</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2037</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2038</b>	Conduct four-tier training for significant expansion of ZEB fleet (304 40-ft buses)	Conduct four-tier training for significant expansion of ZEB fleet (304 40-ft buses)	Conduct four-tier training for significant expansion of ZEB fleet (304 40-ft buses)
<b>FY2039</b>	Annual refreshers training	Annual refreshers training	As needed
<b>FY2040</b>	Annual refreshers training	Annual refreshers training	As needed

## Section H: Potential Funding Sources

*Please identify all potential funding sources your transit agency expects to use to acquire zero-emission technologies (both vehicles and infrastructure).*

There are a variety of potential funding sources that OCTA will explore to partially fund the acquisition of zero-emission technologies. With a combination of these funding sources, OCTA will be in a position to successfully transition to ZEB technologies. When grant funding cannot be obtained, OCTA will need to use local tax revenue for ZEB related costs.

**Table 9: Potential Funding Sources (Optional)**

Fund/Grant	Level of government	Description	Applicability
<b>HVIP</b>	State/CARB	Voucher program aimed at reducing the purchase cost of zero-emission vehicles.  A transit agency would decide on a vehicle, contact the vendor directly, and then the vendor would apply for the voucher.	OCTA does not need to apply; the vendor handles the application process.
<b>Low Carbon Transit Operations Program (LCTOP) and Transit and Intercity Rail Capital Program (TIRCP)</b>	State/CARB/Caltrans	LCTOP is a formula-driven program and TIRCP is a competitive program.  These programs fund projects that support new or expanded bus and rail services, improve multimodal facilities and can include equipment, fueling, maintenance and other costs.	OCTA is already recipient of these funds and can use these funds to purchase ZEBs and related equipment.  Both programs require the agency demonstrate GHG emissions reductions.
<b>Low Carbon Fuel Standard (LCFS credits)</b>	NA	LCFS credits are not necessary funding to be applied for; rather, they are offset credits that are traded (through a broker) to reduce operating costs.	Once ZEBs are acquired and operating, OCTA can collect LCFS and 'sell' them to reduce operating costs of ZEBs.
<b>VW Environmental Mitigation Trust Funding</b>	State	VW's settlement provides nearly \$130 million for zero-emission transit, school, and shuttle bus replacements. Transit may be eligible for up to \$65 million.	Applications are now open for transit agencies. The grant is a one-time deal. OCTA may apply through the <a href="#">online portal</a> as soon as it adopts the ZEB plan.
<b>Carl Moyer and AB 923</b>	State/CARB	Funding to help procure low-emission vehicles and equipment.  Transit buses are eligible for up to \$80,000 funding.	As a fleet larger than 10 vehicles, OCTA would be eligible for \$80,000 or 50% of the vehicle cost (whichever is lower).

<b>Fund/Grant</b>	<b>Level of government</b>	<b>Description</b>	<b>Applicability</b>
<b>AB 617</b>	State/CARB	<p>Community Air Grants constitutes CARB's overall effort to implement AB 617, providing \$250 million in FY17-18 and \$245 million additional in FY18-19.</p> <p>This funding can be used for engine replacement, repower, and infrastructure.</p>	OCTA will monitor this fund and apply when ready. Can be used to purchase infrastructure like hydrogen fueling, etc. Since OCTA will likely acquire new ZEBs, AB 617 will not offset the capital purchase cost of ZEBs.
<b>SB 350</b>	State/California Energy Commission	<p>Clean Energy and Pollution Reduction Act will enable transformation of energy production to zero-emission.</p> <p>Primarily provides funding to public utilities to reduce GHG emissions.</p> <p>Also supports transportation electrification by providing rebates of up to 50% of the electric vehicle supply equipment (chargers, etc.) for transit fleets.</p>	OCTA may apply for this funding as soon as a practical to acquire necessary infrastructure.
<b>SB1 State of Good Repair</b>	State/Caltrans	SGR funds are formula-based funds eligible for transit maintenance, rehabs, and capital programs.	OCTA may apply for this funding opportunity as soon as practical to acquire necessary infrastructure.
<b>Charge Ready</b>	State/SCE	<p>Charge Ready program aims to reduce the infrastructure cost for zero-emission vehicles.</p> <p>Charge Ready can cover the cost for installation of the electric infrastructure as well as rebates for charging stations.</p> <p>However, agencies must provide a grant of easement.</p> <p>Funding is available until 2025 and receipts must acquire at least two BEBs within 18 months to receive the Charge Ready rebates.</p> <p>Note, that Charge Ready is dedicated for EVs and electric buses—will not cover costs for hydrogen infrastructure.</p>	OCTA may apply for this program as soon as practical to acquire necessary infrastructure.
<b>Low or No Emission Program (Low-No Program)</b>	Federal/FTA	<p>Low-No provides competitive funding for the procurement of low or no emission vehicles, including the leasing or purchasing of vehicles and related supporting infrastructure.</p> <p>FY20 application closes March 17, 2020, but this has been an annual program for the FTA (under the FAST Act). In FY19, ~\$85 million was available.</p> <p>This is a stipulation for a local match.</p>	<p>Based on federal budget adoption of a new transportation appropriations bill, it's likely a similar program will continue.</p> <p>OCTA may apply for this program as soon as practical to acquire necessary infrastructure.</p>

<b>Fund/Grant</b>	<b>Level of government</b>	<b>Description</b>	<b>Applicability</b>
<b>BUILD</b>	Federal/USDOT	Formerly TIGER, BUILD aims to support investment in infrastructure.  A local match is required.	OCTA may apply for this program as soon as practical to acquire necessary infrastructure.
<b>Buses and Bus Facilities Program (5339)</b>	Federal/FTA	These grants are competitive and formula-based and are applicable to rehabbing buses, purchase new buses, and invest and renovate related equipment and facilities for low or no emission vehicles or facilities.  For FY20, FTA announced ~\$455 million in competitive grant funding.  Requires a 20% local match. The deadline for FY20 funding is March 30, 2020.	OCTA may apply for this program as soon as practical to acquire necessary infrastructure.



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## **Section I: Start-up and Scale-up Challenges**

*Please describe any major challenges your transit agency is currently facing in small scale zero-emission bus deployment.*

None at the moment. OCTA's current ZEB pilot projects are fully funded; however, OCTA's FCEB pilot project just began in January 2020 and the BEB pilot project is not expected to begin until 2023. Therefore, it is too early to assess maintenance cost and operational issues, compared to conventional fuel type buses.

*How might CARB assist you to overcome these challenges? Please share your recommendations.*

N/A

*Please describe any challenges your transit agency may face in scaling up zero-emission bus deployment.*

The transition to ZEB buses will have a substantial cost compared to OCTA continuing to operate existing fuel types. The per unit vehicle costs for ZEBs are higher and OCTA will need to install new fueling infrastructure at a significant cost. The draft ZEB Rollout Plan attempts to keep the lowest overall cost for OCTA through this transition. This is done by continuing to operate existing fuel technologies as long as allowable and implementing the lowest cost ZEB vehicles based on total cost of ownership. The costs for vehicles, fuel, and infrastructure may change over time. Breakthroughs in battery technology may make BEBs less expensive or a lower cost to produce hydrogen would make FCEBs less expensive. The plan proposed is based on what is currently known about each technology and their associated costs. This will help OCTA better understand the long-term cost and how it may impact the level of transit services which can be provided. It is also important to note that this Rollout Plan was developed prior to the COVID-19 emergency. The plan will need to be updated if transit service levels and fleet requirement are substantially changed in the future.

*How might CARB assist you to overcome these challenges?*

Expand and seek additional funding sources to help agencies meet the purchase requirement. CARB may also assist agencies by authorizing that incentive programs be available for the life of the ICT Regulation.

# Appendix

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## **RESOLUTION NO. 2020-055 OF THE BOARD OF DIRECTORS OF THE ORANGE COUNTY TRANSPORTATION AUTHORITY**

### **ZERO-EMISSION BUS RULLOUT PLAN**

A RESOLUTION OF THE ORANGE COUNTY TRANSPORTATION AUTHORITY,  
WHICH AUTHORIZES THE SUBMITTAL OF THE ZERO-EMISSION BUS  
ROLLOUT PLAN TO THE CALIFORNIA AIR RESOUCES BOARD AS REQUIRED  
BY THE INNOVATIVE CLEAN TRANSIT REGULATION

WHEREAS, in 2018, the California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation, which requires public transit agencies to transition to a 100 percent zero-emission bus (ZEB) fleet, such as battery-electric or fuel-cell electric, by 2040.

WHEREAS, the main provisions of the ICT regulation include:

- Transit agencies which operate a fleet larger than 65 buses are required to submit a ZEB Rollout Plan (Rollout Plan) by July 1, 2020,
- Transit agencies must purchase a minimum number of ZEBs during future procurements, according to the following schedule:
  - Starting in 2023, 25 percent of new bus purchases must be ZEBs (applies to 40-foot buses only),
  - Staring in 2026, 50 percent of all new bus purchases must be ZEBs (40-foot, 60-foot, and smaller cutaway buses typically used for paratransit service),
  - Starting in 2029, 100 percent of all new bus purchases must be ZEBs.
- Transit agencies can earn credits to offset the 2023 and 2026 ZEB purchase requirements by providing zero-emission vehicles not covered by the ICT regulation, and
- The minimum ZEB purchase requirement may be delayed if a certain number of ZEBs are purchased statewide by the end of 2020 and 2021.

WHEREAS, the ICT regulation requires each agency to submit a Rollout Plan to CARB by July 1, 2020.

WHERAS, the Rollout Plan is a living document intended to guide the agency's conversion to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size, and operating requirements.

WHEREAS, the Rollout Plan must be approved by the transit agency's governing body through the adoption of a resolution prior to submission to CARB.

WHEREAS, per the requirements of the ICT, the Rollout Plan includes the following components:

- Type(s) of ZEB technologies a transit agency is planning to deploy,
- Schedule for all ZEB and conventional bus purchases,
- Schedule for infrastructure upgrades and modifications,
- Identification of costs and potential funding sources,
- Plan to deploy ZEBs in disadvantaged communities,
- Training plan for operators and maintenance staff, and
- Goal of full transition to ZEBs by 2040.

NOW, THEREFORE, BE IT RESOLVED that the Orange County Transportation Authority Board of Directors hereby adopts the Rollout Plan as a guide for the implementation of ZEB technology and approves it for submission to CARB.

PASSED, APPROVED AND ADOPTED this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

AYES:

NOES:

ABSENT:

ATTEST:

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Laurena Weinert  
Clerk of the Board

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Steve Jones, Chairman  
Orange County Transportation Authority







OCTA Resolution No. 2020-055

## Fleet Fit Trade-Off Considerations

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
<b>Scheduling and planning</b>	<ul style="list-style-type: none"> <li>Requires scheduling consideration for FCEB <b>average</b> range of ~280 mi (37.5 kg tank) and 365 mi (50 kg tank)</li> <li>FCEBs offer greatest flexibility for detours and other unplanned/planned service changes and road calls/changeouts</li> <li>Two to three buses with FCEBs (50 kg tanks) may require midday refueling (depending on operating conditions) to complete service as currently blocked/scheduled</li> <li>One block will need redesigning</li> <li>Smaller battery pack in FCEBs experience less degradation than BEBs so that operating range decreases are less significant over time, making service planning more consistent and with fewer variables to consider</li> </ul> 	<ul style="list-style-type: none"> <li>Requires scheduling consideration for FCEB <b>average</b> range of ~280 mi (37.5 kg tank) and 365 mi (50 kg tank)</li> <li>Requires scheduling consideration for BEB (400+ kWh battery models) <b>average</b> range of ~160-180 mi</li> <li>Requires consideration of mixed fleet to ensure that appropriate units are scheduled for appropriate blocks/services</li> <li>Two to three buses with FCEBs (50 kg tanks) may require midday refueling (depending on operating conditions) to complete service as currently blocked/scheduled</li> <li>One block will need redesigning</li> <li>Smaller battery pack in FCEBs experience less degradation than BEBs so that operating range decreases are less significant over time</li> <li>Degradation of BEB batteries can significantly decrease the operating range over time, adding complexity to service redesign</li> </ul> 	<ul style="list-style-type: none"> <li>FCEB range most closely approximates to current CNG range</li> <li>FCEB most closely resembles current CNG "business as usual" scenario at OCTA</li> <li>Leverages OCTA's experience with FCEBs</li> <li>Option A presents the simplest scheduling considerations and minimizes reblocking</li> <li>Bravo service would require particular attention if Bravo-branded buses are of only one type of technology and this would increase the bus variants required in Option B (2 service types, OCBus and Bravo, x3 technologies, vs. 2 service types and x1 technology in Option A)</li> </ul>
<b>Operations and dispatching</b>	<ul style="list-style-type: none"> <li>All units can be dispatched for nearly any service or block</li> <li>Dispatch will have greater flexibility to assign units to blocks because of comparable ranges across vehicles, which will maintain a comparable yearly mileage among FCEBs</li> <li>Refueling hydrogen on FCEBs can be completed during a 7-hr refueling window as currently done for CNG buses (hydrogen fueling station equipment designed to fill FCEBs in under 10 minutes, as per peer agency experience)</li> <li>Fueling, cleaning, and maintenance and other service cycle functions would require minimal changes for FCEBs</li> </ul>	<ul style="list-style-type: none"> <li>Dispatch (and maintenance) will need to consider and manage two technologies when buses leave and return to the garages, as well as different ranges to ensure units are dispatched as scheduled to the correct blocks</li> <li>Bus assignment between blocks will be limited due to driving range of BEBs, resulting in fewer accumulated yearly mileage than FCEBs</li> <li>Fueling, cleaning, maintenance and other service cycle functions will require modification for BEBs</li> <li>Parking and charging times for BEBs needs to be closely monitored to ensure a full state of charge and free dispatching for the next service day</li> </ul>	<ul style="list-style-type: none"> <li>Having the fewest variants or types of bus technologies is preferable especially given OCTA's multiple service types</li> <li>Operations and dispatching of FCEBs will be closer to OCTA's business as usual and comparable to operations of CNG buses</li> <li>Leverages operations' and dispatching's experience with FCEBs</li> <li>Managing charging of BEBs adds to the operational activities of OCTA's staff and would likely result in additional personnel and shift modifications</li> </ul>



Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
		<ul style="list-style-type: none"> <li>Recharging BEBs can take between two and six hours and will likely require swapping dispensers' connections to buses overnight or smart charging software to manage charge remotely</li> <li>Refueling hydrogen on FCEBs can be completed during a 7-hr refueling window as currently done for CNG buses (hydrogen fueling station equipment designed to fill FCEBs in under 10 minutes, as per peer agency and OCTA experience)</li> <li>Fueling, cleaning, and maintenance and other service cycle functions would require minimal to no change for changes for FCEBs</li> </ul> 	
<b>Training and agency-wide adoption</b>	<ul style="list-style-type: none"> <li>Requires training for operators, mechanics, schedulers, etc. for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Requires training for operators, mechanics, schedulers, etc. for BEBs</li> <li>Requires training for operators, mechanics, schedulers, etc. for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Option A presents a less steep learning curve than Option B because it recommends one technology type rather than two</li> <li>Option A leverages existing in-house expertise and experience with FCEBs</li> </ul>
<b>Technology availability/OEMs /procurement</b>	<ul style="list-style-type: none"> <li>Fewer FCEB OEMs at present</li> <li>Procurement would require one procurement contract/process</li> <li>Requires one set of spare parts, tools, etc. for FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>More BEB OEMs</li> <li>Fewer FCEB OEMs at present</li> <li>Procurement would require two separate procurements contracts</li> <li>Requires two sets of spare parts, tools, etc. for BEBs and FCEBs</li> </ul> 	<ul style="list-style-type: none"> <li>Option A relies on FCEBs solely, and there are fewer OEMs available than for BEBs</li> <li>Option A would require fewer tools and spare parts than Option B</li> </ul>
<b>Service area-specific considerations</b>	<ul style="list-style-type: none"> <li>OCTA has a relatively compact service area (435 sq. mi.) with hills and several routes with cruising (i.e., freeway-type) portions</li> <li>FCEBs provide flexibility to short and long routes, but special planning for hilly routes</li> </ul>	<ul style="list-style-type: none"> <li>OCTA has relatively compact service area (435 sq. mi.) with hills and several routes with cruising (i.e., freeway-type) portions</li> <li>FCEBs provide flexibility to short and long routes, but special planning for hilly routes</li> </ul>	<ul style="list-style-type: none"> <li>Option A provides the most flexibility for all OCTA services</li> <li>Option B requires coordination for on-route charging infrastructure with different jurisdictions in Orange County</li> </ul>

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
		<ul style="list-style-type: none"> <li>• BEBs could provide better fuel economy on stop-and-go (urban) services</li> <li>• Installation of on-route chargers require permitting and buy-in from project jurisdiction</li> </ul> 	
<b>Total cost of ownership</b>	<ul style="list-style-type: none"> <li>• Estimated TCO is \$2.05 per mile (per bus) over 18 years</li> </ul> 	<ul style="list-style-type: none"> <li>• Estimated TCO at \$2.07 per mile (per bus) over 18 years</li> </ul> 	<ul style="list-style-type: none"> <li>• Hydrogen infrastructure becomes comparable to BEBs in cost with unit discount for large purchases</li> <li>• TCO estimates include capital investment for infrastructure and bus acquisition, operational considerations like maintenance and fuel cost, and mid-life battery or FC replacement. The TCO per mile for Option B is 1% lower than for Option A.</li> <li>• Initial upfront capital cost of Option B is 9% lower than Option A</li> <li>• From an O&amp;M life cycle perspective, Option B is 12% more expensive overall relative to Option A.</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>• Power resiliency requires diesel or CNG generator for FCEB fueling infrastructure</li> <li>• Deviation from modeled fuel efficiency of FCEBs can be mitigated by additional refueling during the day either at an OCTA garage or by arranging fueling contracts with public hydrogen stations currently expanding across California</li> </ul> 	<ul style="list-style-type: none"> <li>• Power resiliency requires diesel or CNG generator for BEB and FCEB fueling infrastructure</li> <li>• Range requirements could be accommodated by midday fueling of FCEBs with municipal or shared infrastructure</li> <li>• Range requirements for BEBs would require in-depot charging for several hours, either during the day or overnight</li> <li>• Deviation from the modeled fuel efficiency when operating buses under real operations can be disruptive for BEBs and could represent adding additional buses to complete service</li> </ul> 	

Trade-off/criteria	Option A (100% FCEBs)	Option B (blended fleet inclusive of 61% FCEBs, 15% depot-only charging BEBs, and 24% depot+on-route charging BEBs)	Notes/comments
Overall fit for OCTA	★ ★ ★	★ ★ ★	

## Vehicle Purchase Outlook

### Fixed-Route Bus Purchases

<u>Fiscal Year</u>	<u>Buses to Purchase</u>	<u># of ZEB Purchases</u>	<u>% of Annual ZEB Purchases</u>	<u>Bus Type</u>	<u>ZEB Fuel Type(s)</u>	<u># of Conv. Bus Purchases</u>	<u>% of Annual Conv. Bus Purchases</u>	<u>Fuel Type(s) of Conv. Buses</u>
2020	304	10	3%	40-ft	BEB	294	97%	CNG
2021	0	0	-	-	-	0	-	-
2022	0	0	-	-	-	0	-	-
2023	0	0	-	-	-	0	-	-
2024	0	0	-	-	-	0	-	-
2025	0	0	-	-	-	0	-	-
2026	0	0	-	-	-	0	-	-
2027	0	0	-	-	-	0	-	-
2028	0	0	-	-	-	0	-	-
2029	20	20	100%	60-ft	FCEB	0	0%	-
2030	0	0	-	-	-	0	-	-
2031	0	0	-	-	-	0	-	-
2032	157	157	100%	40-ft	FCEB/BEB	0	0%	-
	16	16	100%	60-ft	FCEB	0	0%	-
2033	0	0	-	-	-	0	-	-
2034	6	6	100%	40-ft	FCEB	0	0%	-
2035	10	10	100%	40-ft	FCEB	0	0%	-
2036	0	0	-	-	-	0	-	-
2037	0	0	-	-	-	0	-	-
2038	304	304	100%	40-ft	FCEB	0	0%	-
2039	0	0	-	-	-	0	-	-
2040	0	0	-	-	-	0	-	-

Note: Purchase date is two years prior to required for service to allow for procurement and manufacturing

### Cutaway Paratransit Bus Purchases

<u>Fiscal Year</u>	<u>Buses to Purchase</u>	<u># of ZEB Purchases</u>	<u>% of Annual ZEB Purchases</u>	<u>Bus Type</u>	<u>ZEB Fuel Type(s)</u>	<u># of Conv. Bus Purchases</u>	<u>% of Annual Conv. Bus Purchases</u>	<u>Fuel Type(s) of Conv. Buses</u>
2020	116	0	0%	Cutaway	-	116	100%	Unleaded
2021	3	0	0%	Cutaway	-	3	100%	Unleaded
2022	133	0	0%	Cutaway	-	133	100%	Unleaded
2023	3	0	0%	Cutaway	-	3	100%	Unleaded
2024	2	0	0%	Cutaway	-	2	100%	Unleaded
2025	5	0	0%	Cutaway	-	5	100%	Unleaded
2026	5	3	60%	Cutaway	BEB	2	40%	Unleaded
2027	122	61	50%	Cutaway	BEB	61	50%	Unleaded
2028	5	3	60%	Cutaway	BEB	2	40%	Unleaded
2029	136	136	100%	Cutaway	BEB	0	0%	-
2030	6	6	100%	Cutaway	BEB	0	0%	-
2031	5	5	100%	Cutaway	BEB	0	0%	-
2032	7	7	100%	Cutaway	BEB	0	0%	-
2033	7	7	100%	Cutaway	BEB	0	0%	-
2034	125	125	100%	Cutaway	BEB	0	0%	-
2035	8	8	100%	Cutaway	BEB	0	0%	-
2036	139	139	100%	Cutaway	BEB	0	0%	-
2037	9	9	100%	Cutaway	BEB	0	0%	-
2038	8	8	100%	Cutaway	BEB	0	0%	-
2039	10	10	100%	Cutaway	BEB	0	0%	-
2040	0	0	0%	-	-	0	0	-

Note: Purchase date is one year prior to required for service to allow for procurement and manufacturing

BEB - Battery-Electric Buses

Conv. - Conventional

FCEB - Fuel-Cell Electric Buses

ZEB - Zero-Emission Bus



**RESOLUTION NO. 2020-055 OF THE BOARD OF DIRECTORS OF THE  
ORANGE COUNTY TRANSPORTATION AUTHORITY**

**ZERO-EMISSION BUS RULLOUT PLAN**

A RESOLUTION OF THE ORANGE COUNTY TRANSPORTATION AUTHORITY,  
WHICH AUTHORIZES THE SUBMITTAL OF THE ZERO-EMISSION BUS  
ROLLOUT PLAN TO THE CALIFORNIA AIR RESOUCES BOARD AS REQUIRED  
BY THE INNOVATIVE CLEAN TRANSIT REGULATION

WHEREAS, in 2018, the California Air Resources Board (CARB) adopted the Innovative Clean Transit (ICT) regulation, which requires public transit agencies to transition to a 100 percent zero-emission bus (ZEB) fleet, such as battery-electric or fuel-cell electric, by 2040.

WHEREAS, the main provisions of the ICT regulation include:

- Transit agencies which operate a fleet larger than 65 buses are required to submit a ZEB Rollout Plan (Rollout Plan) by July 1, 2020,
- Transit agencies must purchase a minimum number of ZEBs during future procurements, according to the following schedule:
  - Starting in 2023, 25 percent of new bus purchases must be ZEBs (applies to 40-foot buses only),
  - Staring in 2026, 50 percent of all new bus purchases must be ZEBs (40-foot, 60-foot, and smaller cutaway buses typically used for paratransit service),
  - Starting in 2029, 100 percent of all new bus purchases must be ZEBs.
- Transit agencies can earn credits to offset the 2023 and 2026 ZEB purchase requirements by providing zero-emission vehicles not covered by the ICT regulation, and
- The minimum ZEB purchase requirement may be delayed if a certain number of ZEBs are purchased statewide by the end of 2020 and 2021.

WHEREAS, the ICT regulation requires each agency to submit a Rollout Plan to CARB by July 1, 2020.

WHERAS, the Rollout Plan is a living document intended to guide the agency's conversion to a ZEB fleet and may be updated based on changes in vehicle technology, fleet size, and operating requirements.

WHEREAS, the Rollout Plan must be approved by the transit agency's governing body through the adoption of a resolution prior to submission to CARB.

WHEREAS, per the requirements of the ICT, the Rollout Plan includes the following components:

- Type(s) of ZEB technologies a transit agency is planning to deploy,
- Schedule for all ZEB and conventional bus purchases,
- Schedule for infrastructure upgrades and modifications,
- Identification of costs and potential funding sources,
- Plan to deploy ZEBs in disadvantaged communities,
- Training plan for operators and maintenance staff, and
- Goal of full transition to ZEBs by 2040.

NOW, THEREFORE, BE IT RESOLVED that the Orange County Transportation Authority Board of Directors hereby adopts the Rollout Plan as a guide for the implementation of ZEB technology and approves it for submission to CARB.

PASSED, APPROVED AND ADOPTED this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

AYES:

NOES:

ABSENT:

ATTEST:

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Laurena Weinert  
Clerk of the Board

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Steve Jones, Chairman  
Orange County Transportation Authority

OCTA Resolution No. 2020-055

# ZERO-EMISSION BUS ROLLOUT PLAN

# Innovative Clean Transit Regulation

- Adopted in December 2018
- Zero-emission buses have no tailpipe emissions
- Minimum ZEB purchase requirement:
  - *25 percent requirement starting in 2023 for 40-foot buses*
  - *50 percent requirement starting in 2026 for 40-foot, 60-foot and “cutaway” buses (paratransit buses)*
  - *100 percent requirement starting in 2029*
- Submit ZEB Rollout Plan to CARB by July 1, 2020
- Credits for zero-emission mobility option
- Delay in ZEB purchase requirement if a certain number of ZEBs are purchased statewide by the end of 2020 and 2021

ZEB – Zero-emission bus

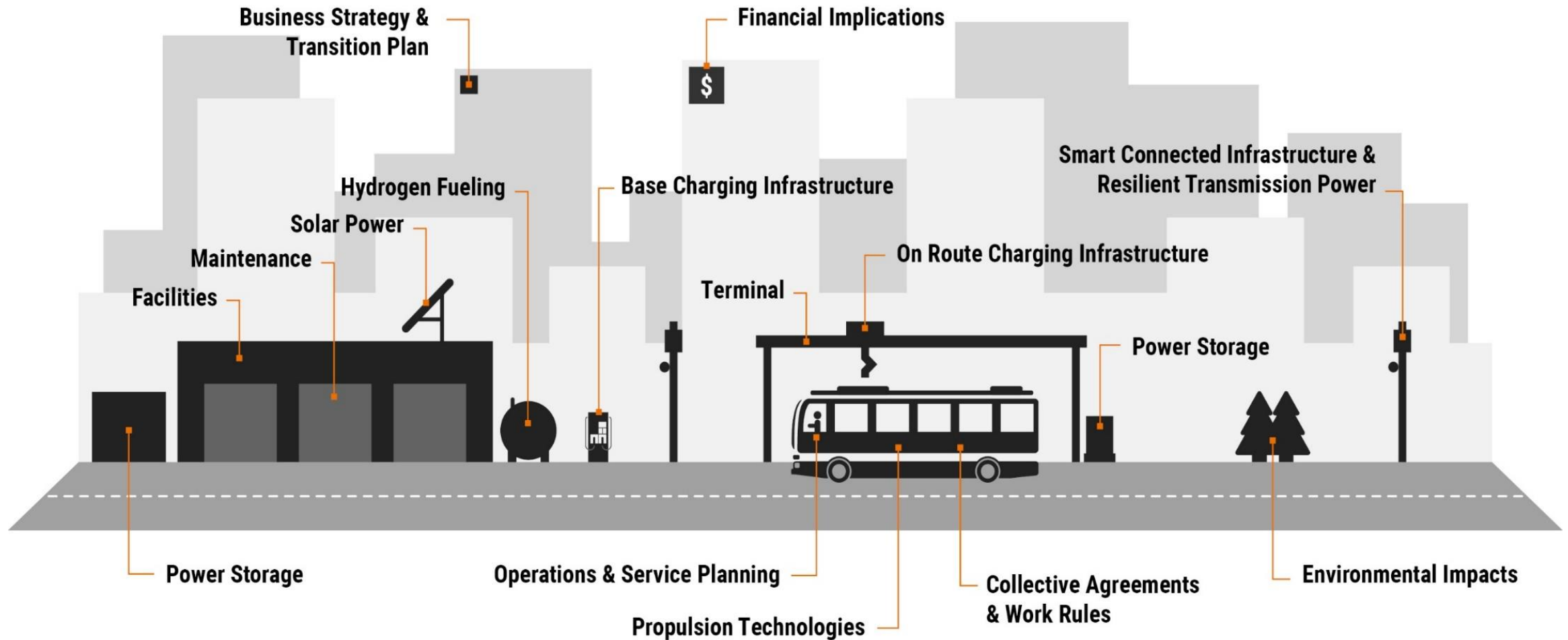
CARB – California Air Resources Board







# What is Included in a ZEB Rollout Plan?

- Type(s) of ZEB technologies a transit agency is planning to deploy
- Schedule for all ZEB and conventional bus purchases
- Schedule for infrastructure upgrades and modifications
- Identification of costs and potential funding sources
- Training plan for operators and maintenance staff
- Plan to deploy ZEBs in disadvantaged communities
- Goal of full transition to ZEBs by 2040
- A blueprint that can be amended as needed

# Elements of ZEB Deployment



# Existing OCTA Fleet

	Bus Type	Fuel Type	Fleet Size	Year Subject to ICT
	40-foot fixed-route	CNG	462	2023
	40-foot fixed-route	Hydrogen (FCEB)	10	Early ZEB purchase
	60-foot fixed-route	CNG	36	2026
	23-foot paratransit	Gasoline	248	2026

CNG – Compressed Natural Gas

FCEB – Fuel-Cell Electric Bus

ICT – Innovative Clean Transit

OCTA – Orange County Transportation Authority

# Vehicle Fueling Technology Key Comparisons

Bus Type	CNG	Hydrogen Fuel-Cell Electric	Battery Electric
Vehicle Range	Longest	Middle	Shortest
Vehicle Cost	\$645,000	\$1,000,000 to \$1,300,000	\$1,000,000 to \$1,100,000
Fuel Cost	Lowest	Highest	Middle
Maintenance Cost	Highest	Middle	Lowest
Infrastructure Required	Existing fueling stations	New hydrogen fueling stations and facility upgrades	Extensive charging infrastructure and utility upgrades



# OCTA Route Modeling Results

- Almost all current OCTA routes can be operated using hydrogen fuel-cell electric buses because of distances the buses need to cover
- A full battery-electric fleet would require additional buses and/or on-route charging to meet current OCTA service needs
- Future changes in vehicle technology and cost factors would inform future OCTA decisions regarding implementation of a zero-emission bus fleet

# ZEB Deployment Strategy by Base

Bus Type	Garden Grove (Fixed-Route)	Santa Ana (Fixed-Route)	Anaheim (Fixed-Route)	Irvine (Fixed-Route)	Irvine (Paratransit)
Hydrogen Fuel-Cell Electric Buses	115	167	113	103	-
Battery-Electric Buses with Depot Charging	19	-	-	-	248
Total Buses	134	167	113	103	248

# Fixed-Route Bus Purchases Outlook

<u>Fiscal Year</u>	<u>Buses to Purchase</u>	<u># of ZEB Purchases</u>	<u>% of Annual ZEB Purchases</u>	<u>Bus Type</u>	<u>ZEB Fuel Type(s)</u>	<u># of Conv. Bus Purchases</u>	<u>% of Annual Conv. Bus Purchases</u>	<u>Fuel Type(s) of Conv. Buses</u>
2020	304	10	3%	40-ft	BEB	294	97%	CNG
2021	0	0	-	-	-	0	-	-
2022	0	0	-	-	-	0	-	-
2023	0	0	-	-	-	0	-	-
2024	0	0	-	-	-	0	-	-
2025	0	0	-	-	-	0	-	-
2026	0	0	-	-	-	0	-	-
2027	0	0	-	-	-	0	-	-
2028	0	0	-	-	-	0	-	-
2029	20	20	100%	60-ft	FCEB	0	0%	-
2030	0	0	-	-	-	0	-	-
2031	0	0	-	-	-	0	-	-
2032	157	157	100%	40-ft	FCEB/BEB	0	0%	-
	16	16	100%	60-ft	FCEB	0	0%	-
2033	0	0	-	-	-	0	-	-
2034	6	6	100%	40-ft	FCEB	0	0%	-
2035	10	10	100%	40-ft	FCEB	0	0%	-
2036	0	0	-	-	-	0	-	-
2037	0	0	-	-	-	0	-	-
2038	304	304	100%	40-ft	FCEB	0	0%	-
2039	0	0	-	-	-	0	-	-
2040	0	0	-	-	-	0	-	-

Conv. – Conventional  
BEB – Battery-electric bus

Note: Purchase date is two years prior to required for service to allow for procurement and manufacturing.

# ACCESS Paratransit Bus Purchases Outlook

<u>Timeline (Year)</u>	<u>Total # of Buses to Purchase</u>	<u># of ZEB Purchases</u>	<u>% of Annual ZEB Purchases</u>	<u>Bus Type</u>	<u>ZEB Fuel Type(s)</u>	<u># of Conv. Bus Purchases</u>	<u>% of Annual Conv. Bus Purchases</u>	<u>Fuel Type(s) of Conv. Buses</u>
2020	116	0	0%	Cutaway	-	116	100%	Unleaded
2021	3	0	0%	Cutaway	-	3	100%	Unleaded
2022	133	0	0%	Cutaway	-	133	100%	Unleaded
2023	3	0	0%	Cutaway	-	3	100%	Unleaded
2024	2	0	0%	Cutaway	-	2	100%	Unleaded
2025	5	0	0%	Cutaway	-	5	100%	Unleaded
2026	5	3	60%	Cutaway	BEB	2	40%	Unleaded
2027	122	61	50%	Cutaway	BEB	61	50%	Unleaded
2028	5	3	60%	Cutaway	BEB	2	40%	Unleaded
2029	136	136	100%	Cutaway	BEB	0	0%	-
2030	6	6	100%	Cutaway	BEB	0	0%	-
2031	5	5	100%	Cutaway	BEB	0	0%	-
2032	7	7	100%	Cutaway	BEB	0	0%	-
2033	7	7	100%	Cutaway	BEB	0	0%	-
2034	125	125	100%	Cutaway	BEB	0	0%	-
2035	8	8	100%	Cutaway	BEB	0	0%	-
2036	139	139	100%	Cutaway	BEB	0	0%	-
2037	9	9	100%	Cutaway	BEB	0	0%	-
2038	8	8	100%	Cutaway	BEB	0	0%	-
2039	10	10	100%	Cutaway	BEB	0	0%	-
2040	0	0	0%	-	-	0	0%	-

Note: Purchase date is one year prior to required for service to allow for procurement and manufacturing.



# OCTA ZEB Pilots

- **FCEBs**

- Commissioned hydrogen fueling station at the Santa Ana Bus Base
- Ten buses now in service
- Funded with state grant
- Credits for reduced future purchase requirements

- **BEBs**

- Procuring ten battery-electric buses starting in 2020
- Conducting assessment of power and charging equipment requirements at the Garden Grove Bus Base
- Working with electric utility to assess electric charger locations and necessary upgrades
- Pursuing grant funding for vehicles and infrastructure



*40-foot Hydrogen Fuel-Cell Electric Bus*



*Hydrogen Fueling Station*

# Next Steps

- Submit Rollout Plan to CARB by July 1, 2020
- Continue procurements of CNG and unleaded buses until 2022
- Test hydrogen fuel-cell electric and battery-electric technology in revenue service
- Return to Transit Committee and Board of Directors meetings for periodic updates as needed
- Update the Rollout Plan as needed

CNG – Compressed natural gas

