



Citizens Advisory Committee Special Meeting

Tuesday, June 21, 2016

11:30am – 12:45 p.m.

550 S. Main St., Orange, California, 92868

Conference Room 07

Agenda

- 1. Chairman and Vice-Chairman Remarks**
Leonard Lahtinen, *CAC Chair*
Roy Shahbazian, *CAC Vice-Chair*

- 2. CAC Mission** *(5 min.)*
Alice Rogan, *Public Outreach Manager, External Affairs*

- 3. Committee Focus and Effectiveness** *(30 min.)*
Group Discussion

- 4. Fare Study Recommendations**
Presentation (30 min.)
Sean Murdock, *Director, Finance and Administration*

- 5. Update Reports** *(5 min. each)*
 - 91 Express Lanes Pavement Rehabilitation
 - Staff LiaisonFernando Chavarria, *Community Rel. Officer*
Alice Rogan, *Public Outreach Manager, External Affairs*

- 6. Committee Member Comments**

- 7. Public Comments**

- 8. Adjournment / Next Meeting**
August 2, 2016

Agenda Descriptions/Public Comments on Agenda Items

The Agenda descriptions are intended to give notice to members of the public of a general summary of items of business to be transacted or discussed. Members from the public wishing to address the Committee will be recognized by the Chairman at the time the Agenda item is to be considered. A speaker's comments shall be limited to three (3) minutes.

Any person with a disability who requires a modification or accommodation in order to participate in this meeting should contact the OCTA at (714) 560-5611, no less than two (2) business days prior to this meeting to enable OCTA to make reasonable arrangements to assure accessibility to this meeting.



Citizens Advisory Committee

Meeting Notes

April 19, 2016

1:00 p.m. to 3:00 p.m.

600 S. Main Street, Orange, Calif.

Conference Room 103/104

Members Present

Paul Adams, *Fountain Valley Resident*

Hamid Bahadori, *Automobile Club of So. CA*

Ralph Bauer, *Council on Aging & City of Hunt. Bch*

Vince Buck, *Cal State Fullerton*

Min Chai, *Irvine Resident*

Brian Cox, *Orange County Bicycle Coalition*

Barbara Delgleize, *Huntington Beach Chamber*

Barry Duffin, *Orange County Wheelmen*

Tom Garner, *Small Business Owner*

Merlin "Bud" Henry, *North Tustin Advisory Committee*

Dan Kalmick, *Huntington Beach Planning Commission*

Leonard Lahtinen, *North O.C. Community College Dist.*

Theodore Luckham, *Anaheim Resident*

Derek McGregor, *Trabuco Canyon Advisory Committee*

Michael McNally, *UC Irvine*

Lyle Overby, *Santa Ana Resident*

Donna Peery, *Tustin Community Services Commission*

Roy Shahbazian, *Transit Advocates of Orange Co.*

Michael Stockstill, *Transportation Professional*

Schelly Sustarsic, *Seal Bch. Parks & Recreation Comm.*

John Taylor, *Rotary Club of San Juan Capistrano*

Greg Winterbottom, *OCTA Board Member*

Members Absent

Dan Avery, *Mission Viejo Resident*

Phil Bacerra, *Santa Ana Resident*

Michael Brandman, *Building Industry Association*

Michael Carroll, *Irvine Community Services Commission*

Kara Darnell, *Transit Advocates of Orange County*

John Frankel, *Resident of Laguna Woods*

Andrew Kanzler, *Orange County Bicycle Coalition*

Frank Murphy, *Orange Rotary*

Dan Oregel, *Santa Ana, Resident*

Laurel Reimer, *OC Young Planners Group*

Jeff Thompson, *Tustin Planning Comm. & Building Assoc.*

1. Chairman's Remarks

Chairman Leonard Lahtinen said at the last meeting there was a presentation on the OC Streetcar project that the cities of Santa Ana and Garden Grove are working on. We received a map of the route and it includes part of the Pacific Electric Right-of-Way (PE ROW). He pointed this out because he is always looking for projects using the PE ROW because OCTA owns this this property. He was happy to see it is being used.

2. Meeting Time

Chairman Leonard Lahtinen proposed the next CAC Meeting on July 19, 2016 be from 12:00-2:00pm and lunch would be provided. He said committee members have busy schedules and he hoped this time would help people stay for the entire meeting. He also announced that the next meeting could be held in the newly remodeled OCTA building. Alice Rogan asked if the committee felt that the current two hour meetings were appropriate. Committee members agreed that two hours was an appropriate length for the meetings and 12:00-2:00pm was a good time.

3. Sales Tax Forecasting Methodology

Sean Murdock, Director, Finance and Administration, gave a presentation on the new Sales Tax Forecasting Methodology.

Michael McNally asked if the original forecasts are saying there would a five percent increase per year. Sean Murdock said yes, the blended growth rate averages approximately 5% for the short-term and averages closer to 4.25% over the long-term.

Ralph Bauer asked is the forecast updated annually. Sean Murdock said yes. Ralph Bauer said he would be interested to know the social and financial variables used. Sean Murdock said the universities use a variety of factors including GDP, production, governmental spending, interest rate, wage and employment statistics, as well as inflation. Most forecasted about two percent for inflation, but we are experiencing inflation of about a half of a percent.

John Taylor asked if revenue from ridership is forecasted in the same way. Sean Murdock said that separate models are used to forecast fare revenue and sales tax. Both fare revenue and sales tax revenue have been affected by the recession.

Tom Garner said airlines used to do long term fuel contracts. He asked if OCTA has given consideration to anything like that. Sean Murdock said OCTA has looked at it, but OCTA does not utilize a sufficient amount of fuel to pursue a long-term fuel contract.

Derek McGregor said the original sales tax forecast model was very sophisticated and now we have a model that is less so, how is OCTA going to ensure consistency. Sean Murdock said that over the past two and a half years the blended rate has varied significantly from actual sales tax receipts, and MuniServices has been far more accurate for both TDA and LTA forecasts. Using MuniServices going forward should improve OCTA's ability to forecast sales tax for budgeting and long-term financial planning purposes.

Merlin "Bud" Henry asked how OCTA predicts its partnership with Chapman University will be affected with the passing of Chapman's Director of Economic Programs. Sean Murdock said, OCTA will reach out to them regarding the forecasts soon.

Leonard Lahtinen said the economic forecast for the bus service seems to have the grimmest forecast. Sean Murdock said the bus program will be impacted and that additional work is being done to assess the short and long term impacts due to the change in methodology.

4. Riverside County Transportation Commission (RCTC) Express Lanes

John Standiford, RCTC Deputy Executive Director, gave a report on the RCTC Express Lanes.

Tom Garner asked if there are any plans to widen Ortega Highway. John Standiford said it is not in any plans due to geographical constraints. OCTA & RCTC did a Major Investment Study (MIS) on Ortega Highway and various options were looked at and safety improvements were made. Tom Garner said Ortega Highway serves South Orange County like the SR 91 services the rest of the county. John Standiford said they are hoping the extension of Metrolink service farther south will help the people of areas like Menifee and Temecula. Also, we hope the toll lanes on the 91 will entice people to make the further commute that is more efficient.

John Taylor asked if there was much push-back on the toll portions of the SR 91. John Standiford said we needed something and quick, so the financing wasn't a problem. To entice Corona residents to agree with the project we added some feeder lanes and signal synchronization.

Hamid Bahadori said when the Environmental Report (EIR) was done there was talk of a SR-241/SR-91 Express Lanes Connector Project and asked about the status on this. John Standiford said they are working with the Transportation Corridor Agency (TCA) and OCTA. Kia Mortazavi said the TCA is amending the environmental document and it will be released soon. The project is due to go to construction a year after the RCTC project is complete, which should be late 2017 and complete by the end of 2018.

Brian Cox asked about the bike lanes along the Santa Ana River Trail. He said the OC/RC connection was never completed. John Standiford said there has been little movement on that. OCTA has been the leader on the project and RCTC is now starting to make some improvements along the trail and it is definitely on the radar and becoming more prominent.

Leonard Lahtinen said he has noticed a lot of weekend construction on the project especially in the area of the SR 91 and I-15. John Standiford said yes, we are trying to get as much work done as possible to complete the project quickly. Most of the closures are mainly done at night, some even on weekends.

Leonard Lahtinen noticed there are signs up already for the new toll lanes and it is confusing as to whether they are open or not. John Standiford said there is a meeting scheduled for today to go over this with the California Highway Patrol and local police, and his guess is those signs will be covered up.

5. State Transportation Improvement Program (STIP) Update

Kia Mortazavi, Executive Director, Planning said he would give the STIP Update (Agenda Item 6), before the California Road Charge Pilot Program (Agenda Item 5).

Michael McNally said we are collecting less gas tax because the price of gas is starkly low, but people then have more disposable income, shouldn't that raise the amount of money collected on sales tax? He said it seems like there is imbalance and wonders if it is due to the payback of the 1B Bonds. Kia Mortazavi said, yes that is a big part of it. He said the other part is people are driving longer distances and buying bigger/fancier cars.

Michael McNally said the last time the Fixed Excise Tax was changed was 1992. Kia Mortazavi said at the state level it was last changed in 1990 and it went from 11 cents to 14 cents and inched up to 18 cents by 1994. Michael McNally asked if there was any movement at the federal level to adjust that for inflation. Kia Mortazavi said there is a resistance to raising taxes. Michael McNally said someone is going to have to pay for it whether it is a gas tax, a VMT tax, or donations from a foreign country. He said it is very misleading – we just need more revenue.

Hamid Bahadori asked if we had not done the sales tax swap with the state, would the impacts have been the same and how did it affected the county. Kia Mortazavi said one of the primary impacts was it allowed the truck weight fees to be diverted to the general fund and a portion of the gas tax backfilled within the pilot funds. Kia said the impact was about the same.

6. California Road Charge Pilot Program

Kia Mortazavi, Executive Director, Planning gave a presentation on the California Road Charge Pilot Program.

Michael McNally asked what the advantage is to the prepaid unlimited mileage permit sticker program – it sounds the same as the gas tax. Kia Mortazavi said the sticker is geared to mileage, but to a higher amount of mileage anonymously.

Michael McNally said he feels that given the complexity, it doesn't matter if there are politicians that are resistant to raising the gas tax and it requires no administrative changes. He said the problem is the gas tax is not scaled to inflation – it does not matter how many miles per gallon you get – and it doesn't account for electric vehicles. In his opinion, this is a scheme to get more revenue; it does not replace the gas tax, people will be paying more. Kia Mortazavi said there are two things – one is how you pay and the other is the rates. He also said they are trying to solve the inequity of electric vehicle versus the car that gets low gas mileage.

Derek McGregor asked what the chance is of the program moving forward since it has to go through so many changes within the government first. Kia Mortazavi said it is

unknown at this point – it is just a study. Derek McGregor said it is good to think about it and take a look at different options.

Tom Garner thanked Kia Mortazavi for the presentation, it is good for the CAC to be apprised of the study. He asked if the standard gas tax and the variable tax would go down with this process. Kia Mortazavi said yes, that is the idea. This system would ultimately be a replacement of the gas tax.

Leonard Lahtinen said we have Oregon to thank for starting talk of this type of program. Kia Mortazavi said Oregon has a pilot program going on with a higher participation from Hybrid users.

Roy Shahbazian asked if the study assumes higher technology options would come into play later. Kia said it is very likely technology options would expand. He said most people do not know that their cars are already talking to auto manufactures based on an electronic device in their car and it would be easy to expand that technology to include tracking mileage for this purpose.

Roy Shahbazian asked if the CAC can help with the pilot program. Kia Mortazavi said there is a website where you can fill out an application for the program and you can also submit comments. Michael McNally said he visited the website and it looks like they know what they are doing.

Paul Adams said he signed up and he got a reply saying they need more information about his age, weight, how many kids, etc.

Paul Adams asked if the DMV will be involved. Kia Mortazavi said yes, the DMV already has a lot of the data and they protect your personal information.

7. Marketing Update

Stella Lin, Manager, Marketing gave an update on the Marketing Program.

8. 2016 Bus Service Plan

Gary Hewitt, Section Manager, Strategic Planning, presented the 2016 Bus Service Plan.

Dan Kalmick asked if the city is aware of Bravo running down Beach Boulevard in Huntington Beach. Gary Hewitt said all the city managers received information about the plan changes and the OCTA Board indefinitely deferred implementation of Route 529 and directed staff to seek external funding for implementation. He said we are also working with Caltrans to study transit signal priority along Beach Boulevard.

Leonard Lahtinen said during Sales Tax Forecasting Methodology presentation earlier in the meeting a real drop was shown in bus revenues, how will this be financed. Gary Hewitt said this is a balanced plan. He said the overall plan reduces some routes,

eliminates some routes and increases services on other routes. He said if ridership continues to drop, this is something we will have to revisit.

9. Update Reports

The CAC received update reports from the following:

- Bike/Ped Subcommittee Report, by Roy Shahbazian, *Chair, Bike/Pedestrian Subcommittee*
- June Service Change, by Scott Homes, *Manager of Transit*
- Government Affairs, by Richard Bacigalupo and Brandon Bullock, *State and Federal Relations*
- Staff Liaison, Alice Rogan, *Public Outreach Manager, External Affairs*

10. Committee Member Comments

Ralph Bauer asked for an update on the I-405.

8. Public Comments

No one from the public spoke.

9. Adjournment

The meeting adjourned at 3:05 p.m. The next meeting will be at the OCTA offices on July 19, 2016 at 12:00 p.m.

**Citizens Advisory Committee
Fiscal Year 2015-2016 Attendance Record**

● = Present

⊙ = Absent

R = Resigned

Member	7/15/15	10/20/15	1/19/16	4/19/16
Adams, Paul	●	●	●	●
Avery, Dan	●	⊙	⊙	⊙
Bacerra, Phil	●	⊙	⊙	⊙
Bahadori, Hamid	⊙	⊙	⊙	●
Bauer, Ralph	●	⊙	●	●
Brandman, Michael	⊙	⊙	●	⊙
Buck, Vince	⊙	●	●	●
Carroll, Michael	●	●	⊙	⊙
Chai, Min	--	--	●	●
Cox, Brian	●	●	●	●
Darnell, Kara	●	⊙	●	⊙
Delgleize, Barbara	●	●	⊙	●
Duffin, Barry	●	●	●	●
Frankel, John	⊙	●	⊙	⊙
Garner, Tom	●	⊙	●	●
Henry, Merlin "Bud"	●	⊙	●	●
Kalmick, Dan	●	●	⊙	●
Kanzler, Andrew	⊙	●	⊙	⊙
Kaupp, Michael	●	●	⊙	R
Lahtinen, Leonard	●	●	●	●
Luckham, Theodore	●	●	●	●
McGregor, Derek	●	●	●	●
McNally, Michael	●	●	●	●
Murphy, Frank	⊙	⊙	⊙	⊙
Oregel, Dan	●	●	⊙	⊙
Overby, Lyle	⊙	●	⊙	●
Peery, Donna	⊙	●	⊙	●
Reimer, Laurel	⊙	⊙	⊙	⊙
Shahbazian, Roy	●	●	●	●
Stockstill, Michael	●	●	●	●
Schelly Sustarsic	●	●	●	●
Taylor, John	●	⊙	⊙	●
Thompson, Jeff	●	●	●	⊙



Citizens Advisory Committee Overview

Background

Public Utilities Code (PUC) 130105 requires the Orange County Transportation Authority (OCTA), in its role as the county transportation commission, to appoint a Citizens Advisory Committee (CAC) to provide input on OCTA's transportation projects, programs, and services. PUC 130105 states that, the commission shall..."Appoint ... a citizens advisory committee, which membership shall reflect a broad spectrum of interests and all geographical areas of the county."

The CAC has gone through a series of membership changes through the years as the OCTA board membership has changed. The present membership, which was adopted by the Board of Directors on February 7, 2005, created a 34 member committee.

Membership Criteria

OCTA Board Members appoint two members each to the CAC, creating a committee of 34 members.

Committee members should be geographically based with representation from all supervisorial districts. A balance of interest is desired between all modes of transportation. Members with proven community involvement, a demonstrated interest in community activities and transportation issues, and a willingness to dedicate no fewer than 20 hours per year to OCTA is desired.

Meeting Frequency

The committee as a whole should meet a minimum of twice per year to hear about upcoming transportation projects and participate in meaningful discussions regarding OCTA outreach efforts. During the year, committee members volunteer to serve on ad hoc committees, participate in roundtable discussions, and hear and advise on various transportation projects, programs and services.

Responsibilities

The committee's responsibilities include:

- Commenting on significant transportation issues, suggesting possible solutions and making recommendations to the OCTA Board of Directors;
- Identifying opportunities for community input;

- Recommending mechanisms and methodologies for obtaining public opinion on specific transportation issues;
- Serving as a liaison between the public and OCTA.

Election of Chair/Vice-Chair

The CAC members shall annually elect a chair to set the agenda with staff and run the meetings. Should the chair be absent, the vice-chair will run the meeting.

Terms of Service

Committee members serve staggered terms of two years beginning in July. Terms are served at the pleasure of the appointing board member. If an appointing Board Member leaves the office, the replacing Board Member has the choice of leaving the acquired appointees in place or replacing the appointees.

Recruitment

Every year, one half of the CAC members' terms expire. About four months prior, an ad is placed in the newspaper of choice seeking interest from the public on serving on the CAC. Staff also polls the members with expiring terms to determine their interest in continuing. This information along with any new applications of interest is passed on to members of the Board. The decision to continue with existing appointments or to appoint a new member is solely the decision of the appointing Board Member.

In the event a member resigns before the term expires, the appointing Board member can appoint a new member mid-term.



CITIZENS ADVISORY COMMITTEE MISSION STATEMENT

As a broad-based, geographically representative committee of the Orange County Transportation Authority (OCTA), created and appointed by the OCTA Board of Directors, the mission of the Citizens Advisory Committee is to provide advice and recommendations to the OCTA for reaching the greatest possible public consensus concerning Orange County transportation matters.

To carry out its mission, the Citizens Advisory Committee will:

1. Review significant transportation issues and provide recommendations to the OCTA Board of Directors as appropriate.
2. Recommend mechanisms and methodologies for obtaining public opinion on specific transportation issues.
3. Identify opportunities for community input.
4. Serve as a liaison between the public and OCTA.



CITIZENS ADVISORY COMMITTEE BYLAWS

Membership and Term

Each member of the Orange County Transportation Authority (OCTA) 17-member Board of Directors appoints two county citizens to serve on the Citizens Advisory Committee (CAC).

- Committee members serve staggered terms of two years.
- All members will serve terms as appointed at the pleasure of their appointing Board Member.
- Any new member appointed to fill an open position created by a resignation will serve the remainder of the resigning member's term.

Election/Removal of Chair and Vice Chair

The members of the CAC will elect, by majority vote, a Chair and Vice Chair at the first committee meeting. The individuals selected as Chair and Vice Chair will serve for one year. These positions may be replaced at any time by a majority vote of the full committee. In the event of resignations, the replacement will be elected by a majority vote.

Duties of the Chair/Vice Chair

Chair:

- Schedule meeting dates
- Establish meeting agenda
- Serve as ex-officio member of all subcommittees
- Act as spokesperson for the CAC when required
- Determine assignments to ad hoc committees based on member interest

Vice Chair:

- Perform duties of Chair when Chair is absent
- Perform other duties as required

Affirmed by CAC vote 10/16/07

Quorum

Attendance by a simple majority of those appointed will establish a quorum. A quorum must be present for any votes to be valid. Information and discussion may take place if a quorum is not present.

Meetings

The CAC will meet as a whole at least two times every year.

- Members of the CAC will adopt a set time and date for their regular meetings.
- Members are expected to make a commitment to attend. Members unable to attend due to extenuating circumstances must notify OCTA staff prior to the CAC meeting.
- Committee members participate in committee activities on behalf of the organization or constituency they represent. Personal interests or issues should not interfere with committee business at any time.

Affiliation

Members may not characterize their opinions or views as representative of the CAC as a whole unless given direction to do so by a majority vote of the committee.


Public Outreach Participation

Throughout the year, committee members will have the opportunity to participate in various public outreach programs to help OCTA seek input on specific issues or projects. Committee members may be asked to participate in outreach programs which may include ad hoc committees, focus groups, roundtable discussions, special events, public open houses, etc. Additional members from the public may also be recruited, as appropriate.



COMMITTEE TRANSMITTAL

May 9, 2016

To: Members of the Board of Directors
From: Laurena Weiner,  Clerk of the Board
Subject: Fare Policy Study Report

Finance and Administration Committee Meeting of April 13, 2016

Present: Directors Do, Hennessey, Katapodis, Miller, and Steel
Absent: Directors Jones, Pulido, and Spitzer

Committee Vote

This item was passed by the Members present.

Committee Recommendations

- A. Receive and file Orange County Transportation Authority's Fare Policy Study.
- B. Direct staff to return to the Finance and Administration Committee with a set of recommendations to improve Orange County Transportation Authority's fare policy.



ORANGE COUNTY TRANSPORTATION AUTHORITY

Fare Policy Study Report

Staff Report



April 13, 2016

To: Finance and Administrations Committee
From: Darrell Johnson, Chief Executive Officer
Subject: Fare Policy Study Report

Overview

The Orange County Transportation Authority's OC Bus 360 Plan contains several initiatives to increase bus system ridership. One of the initiatives within the plan is an evaluation of Orange County Transportation Authority's fare policy. A fare policy study has been conducted and the final report is available for review.

Recommendations

- A. Receive and file Orange County Transportation Authority's Fare Policy Study.
- B. Direct staff to return to the Finance and Administration Committee with a set of recommendations to improve Orange County Transportation Authority's fare policy.

Background

The Orange County Transportation Authority's (OCTA) bus ridership has been experiencing a consistent decline since the Great Recession. As a result, OCTA has undertaken several initiatives, collectively called OC Bus 360, to increase bus ridership. These initiatives include; improving bus travel times and frequencies, expanding access to route and real-time arrival information, introducing mobile ticketing, increasing awareness of the bus system, and evaluating fares. In July 2015, as part of the OC Bus 360 effort, OCTA contracted with a consultant team to conduct an evaluation of OCTA's fare policy.

Discussion

OCTA's fare policy study was organized into six key areas: 1) defining the goals and objectives of the fare study, 2) a review of OCTA's current fare structure, 3) a comparison of OCTA's fare structure to those of its peers, 4) development of fare alternatives, 5) an evaluation of the ridership, revenue, and operational impacts of fare alternatives, and 6) development of a set of recommended changes to OCTA's fare structure.

The consultant firm selected to perform the study is CH2M, which has worked with over 50 transit operators and metropolitan planning organizations nationwide providing fare-related services. Over the last few years CH2M has performed fare policy or structure studies with peer transportation agencies such as Denver Regional Transit District and the Utah Transit Authority, and has also conducted a fare policy evaluation for Metrolink. The firm has also performed work with OCTA in areas such as bus capital planning, transit planning, project management, and is currently helping design, procure and implement the mobile ticketing project. The project team consists of five individuals, including a highly qualified project management team with strong backgrounds in the development of fare policy.

The consultant began the fare policy study by defining a set of goals, along with their prioritization, to provide direction for the findings and recommendations for the study. Interviews were conducted with OCTA staff, including executive management, to define and prioritize the goals and objectives of the study. Based on stakeholder input the goals of the fare study were listed and prioritized as follows:

1. Increase ridership
2. Improve the customer experience
3. Minimize the impact to fare revenue
4. Encourage fare simplicity
5. Enhance equity

Given the prolonged decrease in ridership, the first goal of the study was to evaluate whether changes in fare structure or pricing could be used to promote increased ridership. Improving the customer experience was also important to stakeholders, so changes that would provide easier, more intuitive and innovative fare policies were evaluated. Also key to stakeholders was that changes to the fare policy minimize the impact to fare revenue to ensure that OCTA continues to maximize the amount of revenue available to support bus operations. The final two goals of the study were to evaluate whether changes to OCTA's current fare structure and policy could be made to simplify the policy and make it more equitable for both riders and OCTA. Evaluating fare simplicity for the rider would include changes that simplify the fare purchasing experience or that make fare choices more intuitive. Evaluating fare simplicity for OCTA would include evaluating the

complexity of the current fare structure and policy, fare enforcement, and the operational impacts of changes to fare structure or policy. Lastly, an evaluation of equity would include evaluating OCTA's fare policy for reduced fare passes and ACCESS services, as well as an evaluation of fare pricing relative to trip distance and service cost.

The review of OCTA's current fare structure revealed that it is a relatively simple service-based fare structure. The service types are local, express, and paratransit bus services. Local bus service covers 77 local bus routes, and express bus covers five express bus routes. Paratransit bus service covers OCTA's ACCESS bus service mandated by the Americans with Disabilities Act. Fare offerings for the local service are a mix of single trip, time, and ride based passes. Reduced fares for qualifying senior and disabled riders are also available for all fare media sold for local service. OCTA also offers special fare programs for colleges, universities, and employers for local service. Fare media for express services include single trip and time based passes. Fare media for ACCESS service include a single trip flat fare of \$3.60 per ACCESS rider and \$0.25 for a personal care attendant.

The table on the next page shows OCTA's fixed-route fare media and pricing. Categories for pricing include full fare, reduced fare, special fare, or free fare. The table also shows ridership for each fare media as a percentage of the total fixed-route ridership for local and express service.

Fare Type	Full Fare	Reduced Fare	Special Fare	Free Fare	Percentage of Riders
Local Bus Service					
<i>Trip-Based</i>					
Base Fare	\$2.00	\$0.75			17.4%
ACCESS eligible rider		\$0.25			0.8%
University Pass *			\$1.25		2.0%
Employer Pass *			\$1.25		1.7%
Interagency Transfers **			Varies		2.2%
Child (5 & under)				\$0.00	2.7%
<i>Time-Based</i>					
Day Pass	\$5.00	\$1.50			36.2%
Prepaid Day Pass		\$4.50			0.0%
7-Day Pass	\$25.00	\$8.25			1.2%
30-Day Pass	\$69.00	\$22.25			28.5%
Youth 30-Day Pass		\$40.00			5.8%
College Pass					0.7%
120-Day Pass		\$185.00			
75-Day Pass		\$115.00			
30-Day Pass		\$46.00			
Summer Youth Pass (30-Day Pass)		\$20.00			0.6%
<i>Ride-Based</i>					
Prepaid 5-Ride		\$9.00			0.2%
Express Bus Service					
<i>Trip-Based</i>					
Base Fare					0.0%
Intracounty	\$4.00	\$3.50			
Intercounty	\$6.00	\$5.00			
<i>Time-Based</i>					
Day Pass					0.0%
Intracounty	\$8.00	\$7.00			
Intercounty	\$12.00	\$10.00			
30-Day Pass					0.0%
Intracounty	\$125.00				
Intercounty	\$187.50				
Total	54.1%	39.5%	3.7%	2.7%	100.0%

* Trip-based fare with a monthly cap of \$45.00 for students and \$69.00 for faculty

** Fare dependent upon interagency agreement

Cash and magnetic stripe cards are the two most common forms of fare media used. Passes can be purchased at the OCTA store or at approximately 160 retail locations throughout Orange County. Currently reduced fare media can be purchased without proof of eligibility at retail locations, and eligibility for reduced fare media is verified by the coach operator at the time a rider boards a bus.

Some strengths and weaknesses arose from the review of OCTA's current fare policy. The primary strength was that OCTA has a relatively simple fare structure compared to some local and national peers. The primary weaknesses were that the current fare policy does not cater to the urban/suburban rider demographic, and that despite large variances in trip lengths, the fare charged for an ACCESS trip is a flat fare. An additional weakness is that OCTA does not require proof of eligibility to purchase passes at retail locations. This practice is not consistent with most major transit agencies in the United States and could contribute to fraud and losses in fare revenue.

A peer review was also conducted with 22 transit agencies representing Southern California and national peers. Key characteristics such as service area, population density, boardings, and boardings per capita were compared to OCTA. The peer review also included comparisons of fare policy and structure, as well as farebox recovery, transfer and day pass policy, fare eligibility and enforcement, special fare programs, low income programs, and electronic fare implementation. The complete results of the peer review are included in section 4 of Attachment A. It was noted in the peer review that OCTA has one of the highest population densities when compared to Southern California and national peers. OCTA has the third highest number of boardings when compared to Southern California peers, and higher boardings than approximately half of the national peers. OCTA's fare structure, which includes fare pricing tied to service type, was found to be common among peers. OCTA's base cash fare is priced at \$2.00, with the average fare among Southern California peers at \$1.69 and the average among national peers at \$2.13. Farebox recovery among peers ranged from a low of 13.4 percent to a high of 41.1 percent as compared to 23 percent for OCTA.

Based on the goals and objectives of the fare study, 15 conceptual options were generated and evaluated by the fare study consultant. The conceptual options are potential changes to the existing fare policy that were evaluated based on their qualitative and quantitative impacts relative to the goals of the study. The conceptual options were categorized based on their timeframes for implementation. The conceptual options were categorized into short-term (1 to 2 years), medium-term (3 to 5 years), and long-term (6 to 10 years). The criteria used to qualitatively evaluate the conceptual options are listed in the following table.

Qualitative Evaluation Criteria	Description
1. Improves Ease of Use	Makes the fare system easier to use by customers and to manage by OCTA.
2. Contributes to Simplicity	Streamlines the fare structure by eliminating unnecessary complexity or focusing on specific needs.
3. Ability to Implement	Ability to be implemented, maintained, and enforced without significant capital and operating resources.
4. Improves Equity	Makes the fare structure more equitable to passengers, OCTA, and/or external stakeholders.
5. Impact on Ridership	Potential to increase OCTA ridership.
6. Impact on Fare Revenue	Potential to increase OCTA fare revenue and increase the farebox recovery ratio.

Each conceptual option was then ranked based on a qualitative scale of low, medium, and high relative to its impact on the criteria. A discussion of the qualitative evaluations for each conceptual option is included in section 6 of Attachment A. The final criteria ranking for each option is included in the following table.

Conceptual Option	Improves Ease of Use	Contributes to Simplicity	Ability to Implement	Improves Equity
Short-Term Options (1 to 2 years)				
A1. Reduce Cash Fare from \$2.00 to \$1.50	Medium	Low	High	Low
A2. Reduce Day Pass from \$5.00 to \$4.00	Medium	Low	High	Low
A3. Discounted Youth Cash Fare at \$1.25 and Youth Day Pass at \$3.00	Low	Low	Medium	Medium
A4. Recategorize Express Services	Medium	High	High	Medium
A5. Eliminate 5-Rides Pass and 7-Day Pass	Low	High	High	Low
A6. Offer Discounted Rides to Veterans	Low	Low	Medium	Medium
A7. Implement ACCESS Zone Fares	Low	Low	Medium	High
A8. Incentivize Mobile Ticketing and Pilot New Mobile Fare Products	High	Low	Medium	Low
A9. Enforce Reduced Fare Eligibility Requirements	Low	Low	Medium	High
A10. Scale Back Free Fare Promotions	Low	Medium	Medium	High
A11. Streamline Interagency Agreements	Low	High	Low	High
Medium-Term Options (3 to 5 years)				
B1. Convert Cash Fare to a Two-Hour Pass	Medium	Low	Low	Medium
B2. Eliminate 30-Day C-Pass	Low	Medium	High	Low

B3. Develop Urban/Suburban Fare Structure	Low	Low	Low	Medium
B4. Develop New Specialized Fare Products	Medium	Low	Medium	Low
Long-Term Options (6 to 10 years)				
C1. Implement Distance-Based Fares	Low	Low	Low	High
C2. Consider Fare Capping, Bonuses, and Other Innovative Fare Policies	Medium	Low	Low	High

Following the qualitative evaluation, each conceptual option underwent a quantitative evaluation to assess its impact on ridership and fare revenue. In addition, conceptual options that modify the base fare can impact ACCESS ridership and operational costs, so those impacts were also included in the quantitative evaluation. The results from the quantitative evaluation are shown below.

Conceptual Option	Impact on Ridership		Impact on Fare Revenue	
	Riders (#)	%	\$	%
Short-Term Options (1 to 2 years)				
A1. Reduce Cash Fare from \$2.00 to \$1.50 (Fixed Rte)	1,361,700	2.9%	(1,581,900)	-3.2%
A1. Reduce Cash Fare from \$2.00 to \$1.50 (ACCESS)	148,100	9.0%	(1,070,100)	-18.3%
A2. Reduce Day Pass from \$5.00 to \$4.00	1,198,500	2.5%	(2,202,300)	-4.4%
A3. Discounted Youth Cash Fare at \$1.25 and Youth Day Pass at \$3.00	1,062,100	2.3%	(1,291,500)	-2.6%
A4. Recategorize Express Services	(30,000)	0.1%	149,500	0.3%
A5. Eliminate 5-Rides Pass and 7-Day Pass	(4,900)	0.0%	30,900	0.1%
A6. Offer Discounted Rides to Veterans	260,800	0.1%	(252,900)	-0.5%
A7. Implement ACCESS Zone Fares	(9,000)	-0.5%	111,800	2.1%
A9. Enforce Reduced Fare Eligibility Requirements	(567,400)	-1.2%	632,700	1.3%
A10. Scale Back Free Fare Promotions	(163,300)	-0.3%	74,200	0.1%
A11. Discontinue TAP Card Acceptance	(250,700)	-0.5%	265,800	0.5%
Medium-Term Options (3 to 5 years)				
B1. Convert Cash Fare to a Two-Hour Pass	1,627,500	3.5%	(2,561,800)	-5.1%
B2. Eliminate 30-Day C-Pass	(800)	0.0%	1,300	0.0%
B3. Develop Urban/Suburban Fare Structure (Fixed Rte)	1,333,400	2.8%	(1,226,000)	-2.5%
B3. Develop Urban/Suburban Fare Structure (ACCESS)	53,200	3.2%	(364,600)	-6.2%
Long-Term Options (6 to 10 years)				
C1. Implement Distance-Based Fares (Fixed Rte)	1,655,300	3.5%	1,976,300	4.0%
C1. Implement Distance-Based Fares (ACCESS)	218,700	13.2%	(1,213,700)	-20.7%

Three of the conceptual options caused decreases in the base fare which contributed to estimated increases in ACCESS ridership. The conceptual options and increased operational costs are included in the table below.

Conceptual Option	Cost Increase (\$)
A1. Reduce Cash Fare from \$2.00 to \$1.50 (ACCESS)	6,171,600
B3. Develop Urban/Suburban Fare Structure (ACCESS)	2,204,500
C1. Implement Distance-Based Fares (ACCESS)	9,065,800

Based on the qualitative and quantitative evaluations of the conceptual options, seven recommendations were made to improve OCTA’s fare policy. Following are the recommendations:

Recommendation 1. Reduce the price of the Day Pass from \$5.00 to \$4.00

The reduction in price of the day pass should have minimal operating risks to implement and is estimated to increase boardings by 1.2 million per year. In addition, a reduction in the price would not impact ACCESS ridership or cost. The reduction in price is estimated to negatively impact fare revenue by \$2.2 million per year, which could potentially be supported by Low Carbon Transit Operations Program funds through fiscal year 2020.

Recommendation 2. Recategorize Express Services

Categorize express routes that operate as intercounty routes as express routes, and categorize all intracounty express routes as OC Express routes. This categorization would make the express fare structure more intuitive to riders. The second part of this recommendation is to price the express fares more in alignment with the cost of the service. The table below shows the current and recommended fare structure.

Express Service	Current Fare	Recommended Fare	Average Trip Length
Intracounty (200 routes)	\$2.00	\$4.00	14 miles
Intercounty (700 routes)	\$4-00 - \$6.00	\$7.00	36 miles

Recommendation 3. Eliminate 5 Ride Pass and 7 Day Pass

Both the 5 Ride Pass and 7 Day Pass account for less than one percent of pass usage, and their elimination would contribute to a more simplified fare structure and a reduction in operational costs.

Recommendation 4. Offer Discounted Rides to Veterans

Offer reduced fares for military veterans. The recommended pricing would be the same as the current senior and disabled fare pricing. Estimated impacts to ridership and fare revenue are small, but increased fare eligibility and enforcement would be recommended to reduce the potential for increased fraud.

Recommendation 5. Implement ACCESS Zone Fares

Price ACCESS fares based on a zone system. Establish three zones within the county based on a north, central, and south structure. The price for an ACCESS trip would remain the same (\$3.60 per trip) for crossing one zone, but would increase to \$7.20 if crossing two zones. The higher fare for a trip that crosses two zones would help offset the more expensive cost to deliver the longer trip. This increased cost may also deter some riders from making long trips on ACCESS. OCTA would need to evaluate the impact of potentially modifying two fixed routes (route 83 and route 1) that currently operate in all three zones before implementing this recommendation. Exhibit 7-3 in section 7 of the study shows the recommended zones.

Recommendation 6. Incentivize Mobile Ticketing

OCTA should adjust its fare policy to take full advantage of mobile ticketing and should pursue high mobile adoption. Potential approaches to encourage adoption could include:

- Special offers for early adopters
- Differential pricing for mobile ticketing on certain product types
- Mobile-only products such as stored value, fare capping, or free transfers
- Ride bonuses, such as “1 free ride after every XX ticket purchases”
- Priority access to new products or pilot programs, which can be tested much easier on a mobile platform
- Mobile-only services, such as integrated trip planning or customer service feedback

Recommendation 7. Enforce Consistent Pricing Rules

OCTA should standardize its fare structure by standardizing pricing multiples and discounts. Under this model, the base fare will directly determine pass multiples and discounts. A few examples are listed below, but the recommended pricing rules for all fares are included in Exhibit 8-1 in section 8 of the study.

Fare Type	Current Multiple of Base Fare	Recommended Multiple of Base Fare
30-Day Pass	34.5x	32.0x
Youth 30-Day Pass	0.57x	0.5x
Express 30-Day Pass	31.25x	30.0x

Next Steps

The consultant team will next present the results of the fare study to the Transit Committee to elicit additional feedback. Based on feedback from the Finance and Administration Committee, which governs fare policy, and the Transit Committee, staff will work with the consultant team to put together formal recommendations. The formal recommendations will then be presented to the Finance and Administration Committee before seeking approval from the Board of Directors.

Summary

A consultant team has undertaken a study to evaluate OCTA's fare policy and has made recommendations to modify the current policy. The results and recommendations from the fare study will be presented to the Finance and Administration Committee and Transit Committee to elicit feedback. Based upon feedback from the committees, staff and the consultant team will work to put together formal recommendations that will be brought back to the Finance and Administration Committee before seeking approval from the Board of Directors.

Attachment

- A. Orange County Transportation Authority Fare Policy Study

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ORANGE COUNTY TRANSPORTATION AUTHORITY

Fare Policy Study Report

Attachment A

OCTA Fare Policy Study

Prepared for



Orange County

Transportation Authority

March 2016



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Los Angeles, CA 90017

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1. Introduction

OCTA provides local, express, community, and Stationlink bus services throughout Orange County, with connections to Los Angeles, Riverside and San Bernardino counties as well as complementary ACCESS paratransit service. While economic conditions in the region have improved over the past several years and the residential population continues to grow, OCTA ridership has not kept pace with these trends. Taking a fresh look at OCTA's fare structure and proposing beneficial fare policy recommendations is warranted at this time, as a way to increase system ridership while meeting fare revenue targets. Increases to ridership and fare revenue may be possible by making careful changes to fare policies that meet the needs of transit-dependent riders while encouraging choice riders to use the system.

This study was conducted by defining OCTA's fare policy goals, assessing the current structure, conducting a review of peer agencies' fare policy, drafting conceptual options, analyzing the ridership and fare revenue impacts of the alternatives using the FARES model, assessing implementation considerations, and then recommending a fare structure including a phasing plan. Attention was given to OCTA's current fare policies, current ridership trend, regional socioeconomic factors, and future technologies which may impact fare policies in the future including mobile ticketing.

2. Fare Study Goals and Objectives

It is prudent to begin this fare study by defining a set of goals and objectives, along with their prioritization with respect to one another. These goals will help provide a direction for the findings and recommendations for the study, and align the project stakeholders. Certain goals can be seen as mutually exclusive, or at least difficult to achieve concurrently.

While some of the goals listed below are inter-related, they are each important to several stakeholders within OCTA. This list may evolve throughout the course of the project, but will serve as a baseline by which alternatives and recommendations will be developed.

Goal 1: Increase Ridership

Given the unprecedented and prolonged decrease in OCTA ridership, improving ridership is a high priority goal throughout the agency. Public transportation ridership is influenced by a wide range of factors. While historical ridership levels have fluctuated with fare changes and economic downturns, the current downturn seems to be persistent. There are several major causes of the ridership decline. OCTA reduced service levels by 20% during the Great Recession of 2008 which led to reduced frequency, convenience and overall service quality. In addition, OCTA's research, including the 2015 Bus Market Survey, noted increasing auto ownership among former bus riders and the migration of former bus riders to surrounding counties. The combination of these factors has greatly impacted ridership, and affected OCTA's ability to attract new riders to the system. Lastly, changes in fare structure and policy (price increases) also impact ridership levels. OCTA will need to address changing demographics and new transportation technologies through a combination of fare policy changes, service changes, and public outreach.

Goal 2: Improve the Customer Experience

Improving the customer experience is a core goal that helps all other aspects of the organization. Bus schedules, on-time arrivals, route alignments, fare payments, and customer service are just some of the aspects that impact the customer experience. By providing easier, more intuitive, and innovative fare policies, OCTA can help provide a better experience that will help meet the other goals on this list.

Goal 3: Minimize the Impact to Fare Revenue

Goal #1 to increase ridership is directly related to this goal. Historically, increasing ridership and revenue concurrently through fare policy changes alone is challenging unless there is an increase in service levels that takes place at the same time. Given the resource challenges that OCTA is facing, this goal is meant to minimize the impact to fare revenue through fare policy changes and to meet OCTA's farebox recovery requirement of 20 percent. Based on the majority of OCTA personnel interviewed, increasing ridership and improving the customer experience take precedence over revenue increases provided the impact does not affect the sustainability of existing service levels.

Goal 4: Encourage Fare Simplicity

The current OCTA fare structure is relatively simple when compared to peers. For example, OCTA's flat fare structure and calendar passes are relatively simple compared to some of the more complex zone or location based fare structures that other transit agencies offer. However, there are opportunities to simplify the fare purchasing experience, and make fare choices more intuitive. OCTA serves a diverse range of riders that differing fare products should cater to. Fare simplicity in this context is more related to the ease of fare enforcement for operators (reduce the need for visual fare inspection) and the ease of riders to purchase fare media than to the actual number of fare products available.

Goal 5: Enhance Equity

OCTA currently provides several reduced fare passes and special programs to provide fare equity for several rider groups. However, equity can also be defined in a different manner. Many OCTA personnel who were interviewed view fare equity in the context of distance traveled – for example, should a two mile trip be priced the same as a 20 mile trip. Other equity considerations include the price of ACCESS services, and some inter-agency transfer policies that may not be conducive to farebox recovery goals. Therefore, improving equity from these various points of view also helps with goal #3 of minimizing the impact to fare revenue.

3. Review of OCTA's Existing Fare Structure

3.1 Background

OCTA was formally founded in 1991 when several Orange County Agencies were combined to form one singular agency. OCTA's service covers an area of 465 square miles. This service area covers the 34 cities and the unincorporated areas of Orange County, with direct connections to Los Angeles, Riverside, and San Bernardino Counties via express bus service.

OCTA operates local, community, express, StationLink, and ADA compliant paratransit (ACCESS) services. OCTA operates 77 routes covering approximately 6,200 stops. OCTA is also currently in the development stage for the OC Streetcar project. The OC Streetcar is planned to be operational by 2020 and will serve the cities of Santa Ana and Garden Grove.

OCTA had no fare increases from 1991 to 2004. OCTA's first major increase occurred in 2004. Since then OCTA has made fare policy decisions approximately every four years. This led to fare increases in 2005, 2009, and 2013. The most recent fare increase raised the price of local cash fare rise from \$1.50 to \$2.00 per boarding and the price of day passes rise from \$4.00 to \$5.00.

3.2 Single Trip Fares

OCTA follows a relatively simple fare structure. The current fare structure is based on different service classes. OCTA charges flat fares for its three fixed route services. This fixed route service covers 77 local bus routes, 3 OC Express routes and 2 Express routes. The local bus service single ride fare for regular fare riders is currently set at \$2.00 per ride. Longer distance trips are served by the OC Express and Express services. The OC Express service provides service to and from East Los Angeles and San Bernardino Counties. The OC Express fare is currently set at \$4.00. The Express service provides connections to and from downtown Los Angeles and Riverside County. Express bus service has a flat fare of \$6.00. OCTA also provides special event services, such as the OC Fair Express, which are priced the same as local fixed route service.

Exhibit 3-1. OCTA Single Ride Fares by Mode (Regular Fares)

Fare	Fixed Route Bus
\$2.00	Local bus
\$4.00	OC Express bus (service to East Los Angeles and San Bernardino County)
\$6.00	Express bus (service to downtown Los Angeles and Riverside County)

ACCESS is OCTA's ADA compliant paratransit service. ACCESS charges a flat fare for paratransit service. The fare is \$3.60 per one way boarding for curb to curb service. The ACCESS fare is currently lower than the ADA's maximum mandated paratransit fare of twice the cash fare for comparable fixed route service, due to OCTA using funding from the Measure M2 transportation funding sales tax to subsidize ACCESS fares by 10% (a \$0.40 subsidy). In July 2015, OCTA eliminated charging a \$5.00 one way door to door service for ACCESS riders based on guidance from the FTA. Additionally, ACCESS riders can board Local bus service for a \$0.25 fare.

Exhibit 3-2. OCTA Single Ride Fares

Fixed Route Local Bus Single Ride Fare	ACCESS Single Ride Fare
\$2.00	\$3.60

3.3 Fare Products

OCTA provides a wide range of fare products designed for short, medium and long term riders. In addition to cash fares, OCTA provides both time and ride based passes for local bus service. One-day passes can be purchased at fareboxes onboard buses. Other passes can be purchased online, at the OCTA store, and at participating stores/markets. OCTA is also developing a mobile ticketing service.

Day Pass. Day passes can be purchased onboard buses for \$5.00. The OC Express day passes are priced at \$8.00, and the Express day pass is priced at \$12.00. The OC and Express day passes have a breakeven point of 2 rides. Day passes are valid until 11:59 pm on the day of purchase. Customers can also purchase a prepaid day pass in advance of their day of travel for \$4.50, or \$1.35 for reduced fare.

Seven-Day Pass. Seven day passes are available for local bus service. OCTA provides seven day passes for full fare customers and for discounted fare customers.

Monthly Pass. Monthly passes are available for local, OC Express, and Express services. These passes are sold at a discount relative to cash fares. Monthly passes are available for full and discounted fare customers.

Five Ride Pass. OCTA currently offers a five ride card for local bus service. This is currently the only ride based pass OCTA offers. It is sold at a 10% discount to the full cash fare.

Exhibit 3-3. OCTA Fixed Route Fare Products (Regular Fares)

Service	Cash	5 Rides	Day	Prepaid Day Pass	7-Day	30-Day
Local bus	\$2.00	\$9.00	\$5.00	\$4.50	\$25.00	\$69.00
OC Express	\$4.00	-	\$8.00	-	-	\$125.00
Express	\$6.00	-	\$12.00	-	-	\$187.50

Internal Transfers. For customers paying cash, OCTA does not currently issue transfers. When transferring from local bus service to Express or OC Express, customers with a valid bus pass must pay the differential upcharge between the local bus fare and the Express or OC Express fare.

Intra Agency Transfers. OCTA allows transfers from connecting transit agencies. Customers must show valid connecting agency passes to bus operators when completing intra agency transfers. OCTA accepts various forms of fare media from connection services. Accepted fare media include:

- Anaheim Resort Transit fare media
- Long Beach Transit day passes
- Riverside Transit Authority one-day and 31-day passes
- LA Metro monthly passes and LA Metro TAP cards
- Metrolink passes and tickets

These transfer agreements lead to several complications. Showing connecting agency passes for transfers creates enforcement concerns. Bus operators must be able to verify that passes are valid. This can be very difficult for passes without clearly marked expiration dates. This creates the potential for customers to use outdated passes to ride OCTA for free. This also prevents OCTA from monitoring the number of transfers from each connecting agency. Additionally, intra agency transfers are only allowed on particular routes at designated bus stops. However there is no evidence of strict enforcement of these transfers. These issues are especially problematic for transfers from Los Angeles Metro and Metrolink.

Los Angeles Metro. Many Los Angeles Metro riders use the TAP stored value card. It is not possible for bus operators to verify whether or not the TAP card has any stored value or a valid pass. This allows for the potential of customers using TAP cards without any stored value to ride on OCTA completely for free.

Metrolink. OCTA allows for Metrolink passes and tickets to be used on OCTA routes directly connecting to and from Metrolink stations. There is no direct enforcement of this transfer agreement as the current system leaves transfers at non designated stations at the discretion of the bus operator. OCTA receives \$1.00 per boarding from Metrolink for each transfer.

3.4 Fare Pricing

Prepaid fare products (i.e., daily and monthly passes) are priced in relation to corresponding cash fares. The five ride pass is priced at a 10% discount relative to the full cash fare equivalent. Time based passes can be evaluated by how many trips are required for the pass to break even for the customer. The local service day pass has a multiple of 2.5. This implies that a customer must make 3 boardings during the day in order to benefit from the Day pass. The OC Express and Express day passes have a multiple of exactly 2. These passes do not offer any discount relative to the full cash fare, but do provide convenience compared to cash fares. Monthly passes are offered at a substantial discount relative to cash fares. The monthly local pass is priced at \$69 and breaks even at 35 trips. Both the OC Express and Express monthly passes breakeven at 32 trips. This gives customers making 2 trips per day 22 days a month a considerable discount compared to cash fares. Exhibit 3-4 displays the price, pricing multiple,

and the rider share for OCTA prepaid full fare products. Exhibit 3-5 displays the price, pricing multiple, and the rider share for OCTA prepaid reduced fare products. The displayed fares constitute approximately 90% of total ridership. The remaining fares are comprised of free fares (children under 5 ride free), and other institutional and educational fares.

Exhibit 3-4: Exhibit 3-4. OCTA Prepaid Fare Products (Full Fares)

Service	Cash Fares		5-Ride Pass			Day Pass			7-Day Pass			Monthly Pass		
	Price	Rider share	Price	Price Multiple	Rider Share	Price	Price Multiple	Rider Share	Price	Price Multiple	Rider Share	Price	Price Multiple	Rider Share
Local	\$2.00	16.43%	\$9.00	4.50	0.25%	\$5 (\$4.50 Prepaid)	2.50	21.29%	\$25.00	12.50	0.80%	\$69.00	34.50	14.48%
OC Express	\$4.00		-	-	-	\$8.00	2.00	0.01%	-	-	-	\$125.00	31.25	0.03%
Express	\$6.00		-	-	-	\$12.00	2.00	0.03%	-	-	-	\$187.50	31.25	0.09%

Exhibit 3-5: OCTA Prepaid Fare Products (Reduced Fares)

Service	Cash Fares		Day Pass			7-Day Pass			Monthly Pass			Youth 30-Day Pass		
	Price	Rider share	Price	Price Multiple	Rider Share	Price	Price Multiple	Rider Share	Price	Price Multiple	Rider Share	Price	Price Multiple	Rider Share
Local	\$0.75	0.91%	1.5 (\$1.35 Prepaid)	2.00	14.00%	\$8.25	11.00	0.38%	\$22.25	29.7	13.20%	\$40.00	20.0	5.70%
OC Express	\$3.50		\$7.00	2.00	0.00%	-	-	-	-	-	-	-	-	-
Express	\$5.00		\$10.00	2.00	0.00%	-	-	-	-	-	-	-	-	-

OCTA offers discounted fares for elderly/disabled/Medicare customers for all services. As mandated by FTA, OCTA must offer fixed route service at no more than half the full fare during off-peak hours. OCTA has extended this discount to all hours of the day. The current local service discounted fare is \$0.75. This fare is priced below the FTA mandate. The local service day pass, prepaid day passes, and monthly passes are also offered at deep discount compared to the full fare equivalents. While not mandated by FTA, OCTA does provide discounted fares for Express and OC express services. The OC Express discounted fare is \$0.50 lower than the full cash fare, and the Express discounted fare is \$1.00 lower than the full cash fare. Proof of eligibility is technically required when using a discounted fare product. However, proof of eligibility is not required when purchasing a reduced fare product from a retail location. Eligible customers can apply for an OCTA-issued Reduced Fare ID card to use when paying reduced fare when boarding. Senior and/or disabled customers can also show other state-issued ID when paying reduced fare at boarding.

Exhibit 3-6. OCTA Discounted Fares

Service	Cash	Day Pass	Prepaid Day Pass	Monthly Pass
Local	\$0.75	\$1.50	\$1.35	\$22.25
OC Express	\$3.50	\$7	-	-
Express	\$5	\$10	-	-

In addition to the elderly/disabled/Medicare customer discounts, OCTA offers other discounts. ACCESS eligible riders can board fixed route service for \$0.25 per boarding. This requires that ACCESS customers show proper identification when boarding fixed route service. Children ages 5 and under ride for free

when accompanied by a paying customer. There is a limit of three free-fare children per paying customer.

3.5 Fare Mandates

Federal and state mandates directly impact transit agencies' fare policies.

Half fares for seniors, persons with disabilities, Medicare recipients. As a grantee of the Federal Transit Administration (FTA), OCTA is required to offer half fare discounts on cash fares, during off-peak periods, to seniors, persons with disabilities, and Medicare recipients. Currently, the local bus service discounted fare is less than half the full fare due to subsidized fares from M2. Express and OC Express services are also offered at a discount for these rider groups.

ADA paratransit fares. ADA regulations set the maximum fare that transit agencies may charge on ADA complementary paratransit services at twice the cash fare for a comparable bus trip. The ACCESS fare is currently priced at 1.8 times the fare for the corresponding fixed route service, and is less than twice the full fare due to subsidized fares from M2.

Title VI. The FTA's implementation of Civil Rights law can also have direct implications for fare policies. Transit agencies are required to review planned fare changes and ensure that they do not discriminate against minority or low income populations. Agencies are expected to mitigate planned fares that are found to be discriminatory.

California Specific Mandates. The California Transportation Development Act states that, in order to be eligible to receive maximum state funding, transit operators must achieve a farebox recovery ratio of at least 20%. Recent changes in legislation will soon allow other local sources, such as property tax, advertising revenue, and M2 fare stabilization funds to be included as farebox revenue in order to meet the state mandated 20% farebox recovery ratio. This change will become effective July 1, 2016.

3.6 Special Fare Programs

OCTA offers specialty pass programs which include two college/university pass programs, a youth summer pass program, and a discounted employer pass program.

The student programs are the University Pass (U-Pass) and College Pass (C-Pass). These programs differ by pass duration and are available depending on school enrollment. The U-Pass is available to students/faculty/staff of Cal State Fullerton, UC Irvine, and Chapman University. With the U-Pass program, riders swipe a magnetic stripe card upon boarding. The eligible universities each set the duration and pricing for the U-Pass. The passes are only valid for local fixed route service, and have eligibility requirements. OCTA charges \$1.25 per boarding with a monthly cap of \$45 for students and \$69 for faculty and staff members.

The College Pass (C-Pass) program offers students a range of pass options. The C-Pass program allows students to purchase 30-Day passes, 75-Day passes (one academic quarter), and 120-Day Passes (one academic semester). The passes sell for \$46, \$115, and \$185 respectively. Students must show valid college ID to use C-Passes. C-Passes are available for students of the following colleges:

- Career College of California (30-Day available)
- Cypress College
- Fullerton College (30-Day available)
- Goldenwest College
- Irvine Valley College
- NOCCCD School of Continuation Education
- Orange Coast College
- Saddleback College (30-Day available)
- Santa Ana College (30-Day available)
- Santiago Canyon College
- The Art Institute of California – OC (30-Day available)

Exhibit 3-7. Student Pass Pricing

C-Pass	30-Day	75-Day	120-Day
Cost	\$46	\$115	\$185
Purchase Location	College or OCTA Store	College	College

OCTA offers a flexible employer pass program called the Perk Pass. Perk Passes are magnetic swipe passes valid for one year. The Perk Pass registers the number of swipes per card and sends a monthly bill to the participating employer. Perk Pass customers are charged \$1.25 per boarding. The maximum monthly charge is capped at \$69 per employee. Each month employers have the option to subsidize a portion of employee transportation costs. Employers must apply to become part of the Perk Pass program and are required to have a minimum of 10 bus riding employees to be eligible for the program.

The Summer Youth Pass program is a specialty summer program. Summer Youth Passes are priced at \$20 and provide unlimited travel on fixed local service for 30 consecutive days. Passes are only valid for the period of June 1st to September 30th. This pass is available for youth ages 6-18 years old.

OCTA also provides a Social Services Pass Distributor Program to non-profit and social service agencies. This program allows agencies to purchase OCTA passes at a discounted price. These passes are then distributed or sold at either no cost or at a discount. Non-profits and social service agencies must apply to OCTA in order to be enrolled in this program. OCTA provides the agencies a 5% discount.

3.6 Fare Media

Cash and magnetic stripe cards are the two most common forms of fare media used. Customers can pay for fares by using cash at onboard fareboxes.

Fare Passes

Prepaid fare passes take the form of magnetic stripe cards. Day and monthly passes can be purchased directly from the onboard farebox. New passes must first be activated in the farebox, then swiped.

Unlike smart card passes, these magnetic stripe cards cannot be recharged when the passes become invalid. Additionally, these cards can only be used for a single type of service. Stored value cards, such as the Los Angeles Metro’s TAP card, allow customers to choose a dollar amount to deposit. This ability would allow customers to use one pass to pay for local and express services.

Exhibit 3-8. Examples of OCTA Fare Media



Exhibit 3-9. OCTA Farebox Diagram



Sales Locations

In addition to onboard purchases for day passes, OCTA provides many other alternatives for purchasing passes. Passes can be purchased online through the OCTA website. OCTA is also currently developing mobile ticketing capabilities. Passes can be purchased at the OCTA store in the city of Orange. Passes can also be purchased at over 160 shops and markets in Orange County. These outlets sell OCTA passes through vendor agreements. The vendor agreements provide order discounts based on the number of passes ordered by the vendor.

Exhibit 3-10. OCTA Vendor Program Discounts

Order Amount	Discount
\$1,000 - \$2,000	2%
\$2,001 - \$3,000	3%
\$3,001 - \$4,000	4%
\$4,001 - or more	5%

3.7 Fare Enforcement

At OCTA, reduced fare passes can be purchased without proof of eligibility at retail locations. Therefore, fare enforcement is primarily handled by bus operators. Operators deal with fare enforcement when payment occurs on the bus. Discounted fares require proper identification be shown at boarding, where operators must check for valid ID for these passes. Many forms of ID are accepted for each type of discounted pass. This forces operators to memorize a long list of valid forms of ID per pass. Current valid passes include:

- Senior Reduced Fare ID:
 - Valid driver license
 - California DMV identification card
 - Medicare card
 - OCTA senior fare identification card
- Disabled Reduced Fare ID:
 - OCTA Reduced Fare ID card
 - OCTA ACCESS reduced fare ID
 - OCTA ACCESS PCA reduced fare ID
 - Medicare Card
 - Service Connected Veteran ID
 - DMV Placard Receipt
 - Braille Institute ID
 - Other transit agency issued reduced fare ID
- College C-Pass ID:
 - Cal State Fullerton Titan ID
 - OCTA college fare ID

Bus operators can deny boarding for failure of payment or for failure to present valid identification. When dealing with fare disputes, operators can call OCTA dispatchers to request additional support. Improper use of specialty passes can lead to suspension of pass usage. In repeat and extreme cases, further actions can be taken against instances of fare evasion and improper pass usage. The Penal Code of California states that fare evasion and pass misuse can be subject to a fine up to \$250 and up to 48 hours of community service.

3.8 Fare Structure Strengths and Weaknesses

As discussed during project stakeholder interviews, there are several strengths and weaknesses associated with OCTA's current fare structure. These will be used to identify the key aspects to keep and to change during the development of the fare study. Areas of improvement in particular are important to understand since they have the largest impact to the project goals and objectives.

Strength 1: Simple Fare Structure

As discussed in this report, the current OCTA fare structure is already relatively simple. A flat fare structure coupled with calendar passes is among the more simple fare structures compared with some local and national peers. Even with the current fare structure, there are opportunities to simplify further based on service or ridership type. Mobile ticketing can also provide more innovative fare products, and redefining certain products or programs can provide a more intuitive riding experience.

Strength 2: Fare Policy and Technology Timing

OCTA is in the unique and favorable position to have this fare policy study take place concurrently with a fare technology effort. Since fare technology is the tool that enables fare policy, there are opportunities to recommend new fare products and policies that can benefit riders and the agency. The mobile ticketing implementation will be in progress during the period of the fare study, and stakeholders from both projects are working together. Mobile ticketing provides the opportunity for several innovative fare products that are not based on fixed calendars, such as stored value, fare capping, and other loyalty and discount schemes. In addition to these two efforts, there are several other concurrent agency efforts including service evaluation, capital construction projects, contractor negotiations, and public marketing campaigns.

Weakness 1: Dual Ridership Demographic

Due to its diverse service area, OCTA is essentially providing two general types of bus service. The core local service in the urban center has a grid-based service that operates at higher frequencies and shorter average trip lengths. The express routes and certain outlying local routes operate over farther distances and service suburban customers with longer trip lengths. While this is not unique to OCTA, its current flat fare structure is not catered to this divergent rider demographic. While a unified fare structure is simple, it may not be equitable or practical given the lower farebox recovery on certain suburban routes. Service planning may help redefine or optimize certain routes, but fare policy can be instrumental in providing an intuitive and equitable experience.

Weakness 2: ACCESS Flat Fare and Reduced Fare Sales

Given the long suburban bus routes that OCTA operates, the ADA ACCESS service operates across the same large service area. ADA regulations set the maximum ADA fare at twice the cash fare for a comparable bus trip. The ADA fare is priced at \$3.60, which is priced at 2.0 times the fixed route fare and then discounted by 10% the OCTA fixed route fare. The operating costs for countywide curb-to-curb ACCESS service is orders of magnitude higher than the \$3.60 flat fare. The recovery ratio on ACCESS service is particularly low, and unsustainable given the recent ridership decline. A re-evaluation of the ADA fare structure could help provide a more sustainable and equitable ACCESS service.

In addition to this revenue shortfall, there is potential revenue leakage from reduced fare passes. Currently, the combined senior/disabled reduced fare pass can be purchased without verification or identification at any retail vendor. While bus operators are instructed to ask for identification upon use, there is not equivalent enforcement to prevent improper purchase of reduced fare passes. Most major transit agencies in the U.S. require proof of eligibility to purchase reduced fares. While no verification process is foolproof, it will help limit fraudulent use and increase revenue.

Weakness 3: Interagency Transfer Enforcement

For regional transit users who transfer across agencies to complete a trip, transfers provide the ability to do so without paying additional fares upon boarding subsequent vehicles. However, the enforcement and tracking of transfer use is inconsistent at best. Since most transferring agencies offer paper transfers or proof of payment tickets, OCTA bus operators are required to enforce and tally transfer use. Given the wide range of bus operator responsibilities, transfers are usually difficult to enforce and track accurately. Furthermore, media such as the electronic TAP smartcard from Los Angeles Metro does not have any proof of payment information making verification impossible. Also, Metrolink fare is accepted on OCTA StationLink bus routes that service Metrolink rail stations. Though use of the Los Angeles Metro and Metrolink fare media is restricted to certain transfer points or bus routes, in practice the fare media is being used in other areas within the system and creates fare enforcement issues for bus operators. In the future, more specific transfer agreements and rules could help streamline the interagency transfer process.

4. Peer Review

A peer review was conducted with 22 transit agencies including OCTA's geographic peers, other peers throughout the country with similarities to OCTA with respect to service area, and agencies known to be considering or have recently implemented fare innovations. The Southern California agencies provide insights on fare policy and technology developments within the region; other peers provide context for national trends. The data for this table was sourced from the National Transit Database with data covering 2013 National Transit Database. In order to compare overall agency size, the boardings data reflects all fixed route and paratransit service.

4.1 Service Area

Exhibit 4-1. Peer Transit Agencies – Key Characteristics

Transit Agency	Service Area (Sq Miles)	Population Density	Service Area Population (millions)	Boardings (millions)	Boardings per Capita
OCTA	465	6,495	3.02	54.27	17.97
Southern California Peers					
Anaheim: ART	23	14,939	0.35	8.20	23.43
West Covina: Foothill Transit	327	4,648	1.52	13.86	9.12
Laguna Beach Transit	9	2,525	0.02	0.71	31.15
Los Angeles: Metro	1,513	5,702	8.63	476.30	55.21
Long Beach Transit	98	8,163	0.80	28.65	35.81
San Diego: MTS	716	3,099	2.22	82.11	37.00
San Diego: North County Transit District	403	2,225	0.90	12.13	13.53
San Bernardino: OmniTrans	463	3,197	1.48	16.15	10.91
Riverside: RTA	2,725	624	1.70	9.24	5.44
Other Peers					
Chicago: PACE	3,519	1,600	5.63	35.93	6.38
Denver: RTD	2,348	1,345	3.16	101.54	32.16
Dallas: DART	696	3,503	2.44	71.28	29.24
Houston: METRO	1,285	2,876	3.70	84.24	22.79
Minneapolis: Metro Transit	638	2,892	1.84	81.37	44.10
Phoenix: Valley Metro	732	4,958	3.63	23.91	6.59
Portland: TriMet	570	2,614	1.49	99.32	66.66
Sacramento: RT	213	4,564	0.97	27.30	28.09
Salt Lake City: UTA	751	2,883	2.17	44.28	20.45
San Mateo: SamTrans	97	7,599	0.74	13.04	17.69
Santa Clara: VTA	346	5,436	1.88	44.22	23.51
Seattle: King County Metro	2,134	958	2.04	123.19	60.26

Source: National Transit Database, 2013

Approximately half of the Southern California peers have a larger service area than OCTA. Among its other peers, OCTA is among the agencies with the smallest service area, but has one of the highest population density. Among peers, only three other agencies (Long Beach Transit, Anaheim, and San Mateo) have higher population densities. OCTA is mid-sized in its service area population with around half of the agencies with higher populations. OCTA has the third highest number of boardings among Southern California peers. OCTA has higher boardings than about half of the peer agencies. OCTA has more boardings per capita than half of its Southern California peers but about three quarters of the other peers have higher boardings per capita than OCTA.

4.2 Farebox Recovery

A key measure of the effectiveness of an agency's fare policies is the farebox recovery ratio, which is the share of operating costs that are covered by fare revenues. Among all peers, farebox recovery rates range from a low of 13.4% in Santa Clara to a high of 41.4% at San Diego MTS. To ensure consistency across agencies, the data for the farebox recovery ratios provided in Exhibit 4-2 are pulled from the National Transit Database. The ratios are calculated by dividing total fare revenues for all modes by total operating expenses for all modes, and do not include depreciation expense. Individual transit agencies may calculate their farebox recovery ratios differently. Several of the Southern California and additional peer agencies operate bus and rail service. Typically, rail service has slightly lower operating costs and may impact cause bus and rail agencies to have slightly higher farebox recovery ratios.

Bus cash fares range from \$0.75 in Laguna Beach to \$3.00 among Southern California peers. Comparing the other peers' bus cash fares, they range from \$1.25 in Houston to \$2.50 in Dallas, Portland, Sacramento, Salt Lake City and Seattle. The Southern California peers bus cash fares average \$1.69 while the other peers bus cash fares average \$2.13. In several cases, fares are based on distance or zones traveled, time-of-day, or class of service. The bus fares shown in Exhibit 11 are the local bus cash fare. For those agencies that have distance-based and/or peak/off-peak pricing, they are the fares that are charged during off-peak periods and for the shortest distances. In addition to agencies that set fares by distance, time-of-day, and/or class of service, Minneapolis and Salt Lake City are among the agencies that offer discounts to customers who pay using stored value on agency-issued smart cards.

4.3 Bus Fare Structure

OCTA's bus fare structure with varying levels of service and fares is common among these peers, as Exhibit 4-3 shows. Of the Southern California peers, four out of nine have flat bus fare structures, with no variations for time-of-day, distance, or service type. The other five Southern California peers have some type of express service that is priced higher than the local bus fare. Among the other peers, only two of the twelve, Sacramento and Salt Lake City have flat fares. Seattle and Minneapolis both offer peak and off peak fares. The remaining agencies distinguish between local and express services, but some define as many as four types of service. Notably, San Diego and Phoenix specify rural service in addition to their local and express services.

Exhibit 4-2. Peer Base (Local) Fares and Farebox Recovery Ratios

Transit Agency	Base (Local) Bus Fare	Farebox Recovery	Bus Fare Structure
OCTA	\$2.00	23.0%	Type of Service
Southern California Peers			
Anaheim: ART*	\$3.00	39.2%	Flat
West Covina: Foothill Transit	\$1.25	29.0%	Type of Service
Laguna Beach Transit*	\$0.75	8.4%	Flat
Los Angeles: Metro	\$1.75	26.9%	Type of Service
Long Beach Transit	\$1.25	23.4%	Flat
Los Angeles: Metrolink*	N/A	44.6%	Distance
San Diego: MTS	\$2.25	41.4%	Type of Service
San Diego: North County Transit District	\$1.75	24.0%	Flat
San Bernardino: OmniTrans	\$1.75	20.6%	Flat
Riverside: RTA	\$1.50	20.2%	Flat
Other Peers			
Chicago: PACE	\$1.75	13.4%	Flat
Denver: RTD	\$2.25	27.4%	Type of Service
Dallas: DART	\$2.50	13.7%	Type of Service
Houston: METRO	\$1.25	18.2%	Type of Service
Minneapolis: Metro Transit	\$1.75	31.2%	Zoned
Phoenix: Valley Metro	\$2.00	25.0%	Type of Service
Portland: TriMet	\$2.50	28.1%	Flat
Sacramento: RT	\$2.50	26.0%	Flat
Salt Lake City: UTA	\$2.50	23.4%	Type of Service
San Mateo: SamTrans	\$2.00	16.9%	Type of Service
Santa Clara: VTA	\$2.00	13.4%	Type of Service
Seattle: King County Metro	\$2.50	29.1%	Flat

Source: National Transit Database, 2013, transit agency websites

*Agency connects with OCTA but is not direct peer

Exhibit 4-3. Peer Bus Fare Structures and Pricing

Transit Agency	Neighborhood Bus	Local Fare	Express Bus	Regional Bus	Bus Fare Structure	Peak/Off-Peak	Avg Bus Trip Length
OCTA		\$2.00	\$4.00	\$6.00	Local/OC Express/Express		3.9
Southern California Peers							
Anaheim: ART		\$3.00			Flat		2.1
West Covina: Foothill Transit		\$1.25	\$2.45-\$2.75	\$4.90	Local/Rapid/Express		7.5
Laguna Beach Transit		\$0.75			Flat		1.8
Los Angeles: Metro		\$1.75	\$2.50		Local/Express		4.2
Long Beach Transit		\$1.25			Flat		3.1
San Diego: MTS		\$2.25	\$5.00	\$5-\$10	Local/Rapid/Express/Rural		3.6
San Diego: North County Transit District		\$1.75			Flat		4.8
San Bernardino: OmniTrans		\$1.75			Flat		4.8
Riverside: RTA		\$1.50	\$3.00		Local/Express		6.3
Other Peers							
Chicago: PACE		\$1.75	\$4.00		Local/Express		6.3
Denver: RTD		\$2.25	\$4.00	\$5.00	Local/Express/Regional/Airport		5.3
Dallas: DART		\$2.50	\$3.50	\$5.00	Local/Regional/System		4.1
Houston: METRO		\$1.25	\$2.00-\$4.50		Local/Park-n-Ride 1-4		5.1
Minneapolis: Metro Transit	\$0.50	\$1.75	\$2.25		Downtown/Local/Express	✓	4.0
Phoenix: Valley Metro		\$2.00	\$3.25	\$4.00	Local/Express/Rural		5.1
Portland: TriMet		\$2.50			Flat		3.9
Sacramento: RT		\$2.50			Flat		3.6
Salt Lake City: UTA		\$2.50	\$4.50	\$5.50	Local/Ski Park City/Premium Express		4.5
San Mateo: SamTrans		\$2.00	\$5.00	\$4.00	Local/Express/Regional		4.8
Santa Clara: VTA	\$1.25	\$2.00	\$4.00		Community/Local/Express		5.1
Seattle: King County Metro		\$2.50			Peak: Two Zones	✓	14.9

Source: Transit agency websites

Among its Southern California peers, OCTA's local fare, \$2.00, is second highest with San Diego MTS surpassing OCTA's fare by \$0.25. Among other peers, OCTA has similar local fares with half of the agencies charging more than OCTA. Compared to Southern California peers, OCTA again has the second highest Express bus service fare at \$4.00. Again San Diego MTS at \$5.00 is the only agency that charges more for its Express service. OCTA's Express service fares are similar to its other peers; half of the other peers charge a higher fare. OCTA's regional Express bus service fare at \$6.00 is the second highest among Southern California and other peers. Once again, San Diego MTS is the only agency that charges a higher fare for regional Express bus service.

The average length of an OCTA bus trip calculated as boardings divided by revenue service miles is 3.9 miles, which is similar to the many of the Southern California peers. It is also noticeably lower than that for most other peer agencies.

4.4 Transfers

Transfers allow riders to complete trips that require more than one vehicle without needing to pay an additional fare. Four of the nine Southern California peers offer transfers, with San Diego MTS offering transfers only for light rail. Eight of the 12 other peers offer transfers. Most agencies provide free transfers, charge a nominal fee of \$0.25, or \$0.50 or an upgrade for riders transferring to a more expensive mode. Among the peers summarized in Exhibit 4-4, only PACE Suburban Bus in Chicago and Foothill Transit in Los Angeles charge for transfers, giving less than a full fare credit for passengers transferring among vehicles. A few peers have adopted the concept of purchasing time, effectively turning transfers into short duration passes (e.g., Portland's 2.5-hour ticket and Dallas' 2-hour pass). Long Beach, Riverside, Phoenix, Sacramento, San Bernardino, San Diego, San Mateo, and Santa Clara rely on day passes instead of transfers.

Exhibit 4-4. Peer Transfer Policies

Transit Agency	Base (Local) Bus Fare	Day Pass Price	Day Pass Break Even	Transfer Fee	Validity Period & Restrictions	Transfer Media
OCTA	\$2.00	\$5.00	3	No Cash Transfers		
Southern California Peers						
Anaheim: ART	3.00	\$8.00	7	No Cash Transfers		
West Covina: Foothill Transit	\$1.25	N/A	N/A	\$0.50/Upgrade	2 Hours	Paper Transfer, Smart Card
Laguna Beach Transit	\$0.75	N/A	N/A	Free	2 Hours	Paper Transfer
Los Angeles: Metro	\$1.75	\$7.00	4	Free	2 Hours, No Round Trips	Smart Card
Long Beach Transit	\$1.25	\$4.00	4	No Cash Transfers		
Riverside: RTA	\$1.50	\$4.00	3	No Cash Transfers		
Omnitrans	\$1.75	\$5.00	3	No Cash Transfers		
San Diego: MTS	\$2.25	\$5.00	3	No Cash Transfers; Transfers for LR only		
San Diego: NCTD	\$1.75	\$5.00	3	No Cash Transfers		
Other Peers						
Chicago: PACE	\$1.75	N/A	N/A	Free/\$0.25/Upgrade	2 Hours, No Round Trips	Smart Card
Denver: RTD	\$2.25	\$6.75	3	Free/Upgrade	3 Hours, No Round Trips	B: Paper Transfer LR: Paper Ticket
Dallas: DART	\$2.50	\$5.00	2	Free	2 Hours	Magnetic Pass
Houston: METRO	\$1.25	3.00 ⁽¹⁾	3	Free/Upgrade	3 Hours, No Round Trips	Smart Card, Paper Ticket ⁽²⁾
Minneapolis: Metro Transit	\$1.75	N/A	N/A	Free/Upgrade	2.5 Hours, No Round Trips	Magnetic Transfer, Ticket; Smart Card
Phoenix: Valley Metro	\$2.00	\$4.00 ⁽³⁾	2 or 3 ⁽³⁾	No Cash Transfers		
Portland: TriMet	\$2.50	\$5.00	2	Free	2.5 Hours	B: Paper Transfer LR: Paper Ticket
Sacramento: RT	\$2.50	\$6.00	3	No Cash Transfers		
Salt Lake City: UTA	\$2.50	\$6.25	3-5	Free/Upgrade	2 Hours	Paper Transfer, Smart Card
San Mateo SamTrans	\$2.00	\$5.00	3	No Cash Transfers		
Santa Clara: VTA	\$2.00	\$6.00	3	No Cash Transfers		
Seattle: King County Metro	\$2.50	\$8.00*	Varies	Free/Upgrade	2 hours	B: Paper Transfer; B and LR: Smart Card

Source: Transit agency websites (1) Day Pass valid on Smart Card only (2) Paper ticket transfer is for limited time through September 30, 2015. (3) \$2.00 charge for on board purchase. Breakeven is 3 if on-board purchase.

4.5 Day Passes

Day passes were first introduced over 20 years ago as a means of responding to fraud associated with transfers. Agencies that introduced day passes often did so as they eliminated transfers, to give riders an alternative to paying additional fare(s) if they needed to use more than one bus to complete a trip. Day passes are usually priced to break even at about three trips, depending in part on usage rates. OCTA's day pass breaks even at three boardings and is in line with peers.

To maximize access to day passes, they were initially sold on board buses, much like a transfer, by tearing a slip of paper with the current date and valid until the end of the service day. To improve security, some agencies sell day passes by issuing them from farebox TrIMs or using thermal printers. In Phoenix, day passes were introduced when transfers were eliminated and the decision was made to sell them on board for the convenience of riders. After a few years, the decision was made to minimize operator involvement in fare sales and a \$2 on-board surcharge was introduced. It costs 50% more to purchase a day pass on-board (\$6 instead of the off-board price of \$4).

Smart card fare systems have also enabled the introduction of accumulators and fare capping. In the United States, Santa Clara VTA, and Alameda-Contra Costa Transit (AC Transit) in the San Francisco Bay Area and Houston METRO have implemented day pass accumulators. For example, in Houston the day pass is capped at three trips. Customers with day passes pay \$1.25 for each boarding throughout the day until they board the third trip. At that point, the system deducts \$0.50 and their fares are capped for the rest of the day, ensuring that no customer pays more than the \$3 cap.

Houston previously had a paper day pass, which was eliminated with the smart card launch. It was reintroduced in response to customer demand, especially from social service agencies. In addition to the day pass accumulator, which is issued on a separate, specially encoded smart card, Houston offers a trip accumulator on its conventional smart card, the Q Card. The Q Card trip accumulator provides five free trips after 50 paid trips. The accumulator approach is consistent with METRO's focus on vending only stored value (instead of pass products), to support the smart card implementation and smart card penetration. Customer interest in the new day pass has been lower than expected, possibly because the two accumulators are separate and customers must choose between them. Trips taken toward a day pass do not also accumulate toward the 50-trip accumulator. METRO staff also observed that many customers are not reaching the day pass cap, largely because METRO provides a 3-hour transfer window for trips taken using a smart card.

Houston's experience notwithstanding, day passes have minimized issues with cash transfer abuse, and have become popular, particularly among customers who cannot afford the cost of longer period passes, and as a means for human/social service agencies to provide transit fares to their clients.

4.6 Discount Fare Eligibility

OCTA like many of its peers has difficulty enforcing discount fare eligibility. Many transit agencies have tried to manage the issue of the eligibility of their customers using discounted fares. The Federal Transit Administration is supportive of these agencies' efforts to ensure eligibility and permits agencies to require eligible riders to obtain an agency-issued proof of eligibility in order to receive a discount fare.

Today, OCTA requires that seniors aged 60 & older, persons with disabilities and Medicare cardholders show proof of eligibility to the bus operator when boarding, but enforcement of onboard enforcement is often difficult. Reduced fare patrons can apply for an OCTA Reduced Fare ID in lieu of state-issued proof of eligibility. However, proof of eligibility is not required when purchasing a reduced fare product from a retail location, which can lead to misuse and potential fraud if onboard validation is not enforced. Most local and national peers usually require discount-eligible customers to show proof of eligibility when reduced fares are purchased. The small number of agencies that do not require eligibility upon purchase have similar issues with misuse and enforcement.

4.7 Fare Enforcement

Currently, OCTA's fare enforcement depends upon the bus operator to verify if the patron has paid the fare or with an inter-agency transfer. Reduced fare passes can be purchased without proof of eligibility at retail locations, which could be prone to misuse. Most other transit agencies require a form of reduced fare eligibility to be presented at retail sales locations. Fare enforcement onboard the bus is prone to conflict with the bus operator since he is responsible for verifying payment. Other transit agencies use additional validation methods, including requiring a reduced fare card for purchase or using fare inspectors aboard buses to ask patrons for proof of payment.

Transfer policies are difficult to enforce and for some transit agencies, transfers have been a source of significant levels of fare abuse and evasion, especially when transfers are slips of paper that must be torn by bus operators to indicate the validity period. As a result, some agencies (e.g., Phoenix, San Diego,) eliminated transfers and transitioned to day passes; others (e.g., Los Angeles and Salt Lake City,) offer transfers exclusively for fares paid using electronic fare media, improving enforcement of transfer policies by managing transfer issuance and acceptance electronically. Other agencies that have retained cash transfers have transitioned to farebox TrIMs (transfer issuing machines) or printers to issue paper or magnetic stripe transfers. For example, Portland recently introduced thermal printers, which provide more accurate and legible expiration times, to issue transfers.

Half of the peer agencies have successfully implemented an electronic fare system. With an electronic fare system, payment verification is done by the system instead of the bus operator. Patrons tag the device with a smart card and the electronic fare payment system determines whether the patron has the appropriate fare to board. The electronic fare payment system simplifies the payment process and enables the bus operator to enforce fares using the system.

4.8 Electronic Fare Implementation

Of the 22 peer agencies reviewed, 11 or half of them have successfully implemented public electronic fare systems; they include Foothill Transit, Los Angeles, Long Beach Transit, San Diego, Chicago PACE Suburban Bus, Houston, Minneapolis, Salt Lake City, San Mateo, Santa Clara, and Seattle. Since fares and transfers are all calculated by the system, these agencies are able to simplify fare payment. The patron does not need to fumble with cash or figure out if she gets a transfer or can use one. An electronic fare system also relieves the bus operator's responsibility to enforce fare payment.

Mobile ticketing is becoming more common as it gives patrons the opportunity to purchase tickets on their mobile smart phones and flexibility without the need for expensive and clunky infrastructure such as ticket vending machines. Five of the 22 agencies are currently implementing mobile ticketing: San Diego MTS on its trolley service, San Diego NCTD on its commuter rail service, Dallas DART, Portland TriMet, and Santa Clara VTA.

4.9 Special Fare Programs

Many of the peer agencies have discount passes and fares for specific groups or institutions such as employers, universities, and social services agencies. Denver RTD's institutional program launch on an electronic fare system is unique in that it is piloting its electronic fare system with its institutional programs, e.g. EcoPass, before it is implemented for the general public.

Denver RTD's EcoPass program was built on an "all-in" insurance model with the objective of attracting new riders by providing deeply discounted passes through employers, universities, and more recently, through neighborhood associations. EcoPass pricing was initially set using surveys to estimate usage, but it has never been adjusted to account for actual and current usage rates – although prices have been adjusted with each general fare increase. As a result, break even points are very low. Denver RTD staff estimate the breakeven point for passes sold per business is 1.2 for 10-person businesses and 2.2 for 20-person businesses.

Denver RTD's smart card program was implemented to provide the data needed to assess EcoPass usage and make decisions about how to price the program. Denver RTD created an EcoPass Smart Card Task Force to determine how utilization data will be used.

4.10 Low Income Programs

Most transit agencies have programs similar to OCTA's Social Services Bus Pass Distributor Program, which provides fare products (typically tickets, tokens, and day passes) at a discount to eligible non-profits. There is increasing demand for low income programs and transit providers have begun to look for solutions that provide better-managed benefits using criteria to qualify individuals for the programs. In Santa Clara, VTA works with County Human Services to support, manage eligibility, and distribute monthly passes as part of their case work with homeless residents.

The low income program being implemented by King County Metro in Seattle is the most watched development in low income transit fares. The program will provide a reduced fare of \$1.50 (compared to Metro's \$2.25 off peak, \$2.50 one-zone peak, and \$3.00 two-zone peak fares), which will be available to adult riders with incomes at or below 200 percent of the federal poverty level. King County will work with local and state service providers to determine the most accessible and cost-effective way to verify program eligibility. Eligible individuals will have to requalify for this fare program every two years.

Qualified riders will use an ORCA card to pay the fare; cash will not be accepted for reduced-fare payment on buses. For eligible reduced fare customers, using an ORCA card, loading value onto the card, fare payment, and transfers will be the same as it is for other ORCA card users. Metro's other programs that provide reduced fares will continue.

Key features of the Metro program that are best practices among peer agencies include relying on other agencies (i.e., social/human services providers) to administer the programs, handle eligibility assessments, and distribute benefits.

5. Price Elasticity Values and FARES Model Calibration

5.1 Objective of Elasticity Estimation

For the OCTA Fare Study, CH2M HILL was requested to calculate price elasticities to measure the effects of fare changes on ridership, using historic ridership and fare revenue data provided by OCTA from 2006 to 2015. A price elasticity is a measure of how responsive demand is to a change in a product's price.

In this study, fare elasticities measure the responsiveness of ridership to a change in fare prices.

$$\text{Fare Elasticity} = \frac{\% \text{ Change in Ridership}}{\% \text{ Change in Price}}$$

5.2 Elasticity Estimation Methodology

Multiple regression analysis was used to calculate elasticities with a variety of inputs related to OCTA's fares and services over the past few years. The analysis included steps to control for additional external factors which may impact public transit use. Regression equations were arranged to predict ridership levels based regional employment, population, and average gasoline prices. The general form of the regression equation is listed below.

$$\text{Ridership} = \text{Fare Price} + \text{Employment} + \text{Population} + \text{Gas Price}$$

Traditional regression coefficients estimate the absolute impact of a change in an independent variable on a dependent variable. For example, the traditional regression coefficients for the equation above would show the change in the absolute number of riders given a one dollar increase in fare price. In order to estimate an elasticity, the data must be transformed. The most convenient transformation is to take the natural logarithm of the data for each variable before running the regression analysis. This transformation converts the regression coefficients into the final elasticities.

The regression analysis and elasticity calculations were done in the statistical software R. This software is versatile and is used by economists, data scientists, and many Fortune 500 companies. For this analysis, R was used to clean the various data sets, join the variables, run the regressions, compute the elasticities, and post-test the results. Elasticities were calculated using the coefficients from the regression results with ridership as the dependent variable. Elasticities were calculated for each of the independent variables listed below.

- Fare price
- Regional employment for Orange County
- Population estimates for Orange County
- Average regional gasoline prices

5.3 Elasticity Estimation Data

OCTA provided ridership and fare revenue data that was provided at monthly intervals beginning in June 2006 and ending in October 2015. The dataset broke ridership and revenue down by pass type, route category, and rider category. This format allowed for convenient analysis of both monthly and annual ridership trends.

In addition to ridership and revenue data, OCTA also provided a dataset with historic fare pricing. Fare prices for each year were provided for each pass type. The fare price dataset included data for cash and pass fare products. With the exception of the E-Pass and U-Pass, fare prices reflected the fare product price in dollars. The E-Pass and U-Pass fares were reported as the average fare paid per boarding.

Population and employment datasets were sourced from the US Federal Reserve's FRED database. Population data for Orange County was recorded annually over the period of 2004 to 2014. Employment data for Orange County was measured monthly. The gas price data set was sourced from the Energy Information Administration (EIA). The gas price data recorded monthly gas prices for the Los Angeles-Orange county urban area.

The ridership, fare, and control variable datasets were stored in different formats. Creating a final data set in a concise format required considerable effort joining the data sets and validating the results. Once the data had been combined the data was then filtered to only include the most relevant data.

Filtering the data included determining the relevant fare products, rider groups, and route categories to analyze. The ridership data included the total boardings and revenue per individual fare product per month for the entire system. Free fare products were removed from the data set. Short pay fares were removed, as this category does not represent a sold pass product with a set price. The 5 Ride Passes and prepaid-day passes were excluded due to limited history with the fare products based on their implementation in 2013. The final data set was arranged so that elasticities could be estimated for the fare products / route categories requested in the scope of work.

Exhibit 5-1 below displays overall ridership trends by rider groups. These ridership trends can shed some light on the range of elasticities estimated in the table above. The recession appears to have significantly affected adult ridership. There appears to be a sharp decline in overall ridership from 2008-2010. Following this period, ridership increases slightly from 2010 to 2012. Ridership then decreases in the years following 2012. It should be noted that the 2015 ridership numbers only display ridership data through October of 2015.

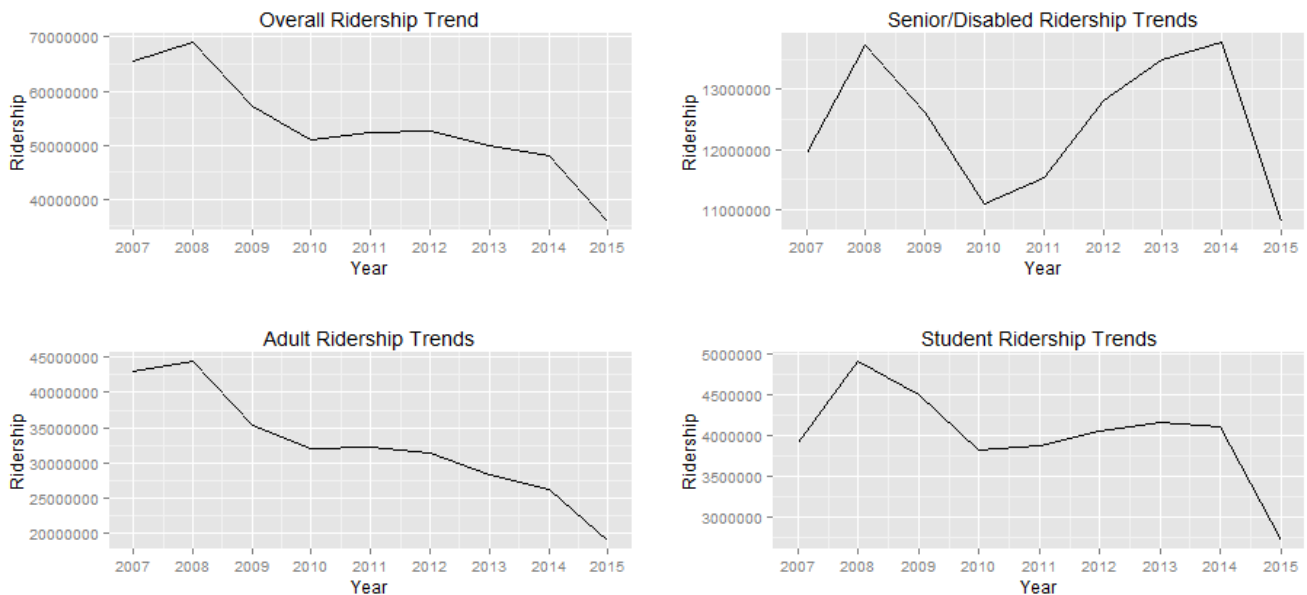
Given that adult ridership comprises the bulk of OCTA's overall ridership, it is not surprising that the adult ridership trends closely mirrors the overall ridership trend. The decrease in adult ridership implies that adult fare products would generally have a negative elasticity with respect to the fare increases which occurred during this time period.

The senior and disabled ridership group appears to first lose a considerable number of riders during the recession. After this initial decrease, senior and disabled ridership then experiences substantial growth. This growth trend may cause some noise in the data. It is difficult to pin point the cause of this growth

trend. The increase in senior and disabled ridership may be attributed to a growth in the senior and disabled population in Orange County during this period. OCTA has also lowered the senior age requirement from 65 to 60, which may explain the growth in Senior/Disabled fares. Due to the unknown nature of this increase, the analysis was not able to further control for this unique trend. This increase in ridership, despite fare increases occurring during this period, may cause the model to estimate positive price elasticities for fare products for this group.

The impact of the recession was less pronounced for students and youth riders. This was to be expected as this rider group is more insulated from the economic impacts of the recession than other rider groups. Despite this insulation, student and youth ridership did decrease from 2008-2010. Students and youth are an interesting ridership group because there are many different types of specialty pass programs available to this group. Increased advertisement and expansion of these pass programs can lead to drastic changes in ridership. For example, expanding the C-Pass program to an additional university could lead to a substantial increase in student ridership.

Exhibit 5-1. OCTA Ridership Trends by Rider Group



5.4 Impact of Control Variables

As mentioned in the previous sections, elasticities were calculated for each of the independent variables. Therefore for each regression, there is a fare elasticity, population elasticity, employment elasticity, and gasoline elasticity coefficient. 64 regressions were run during the analysis yielding 256 elasticity coefficients in total. For this analysis, the fare elasticities will be described in detail.

In general, the control variable elasticities varied widely. The population elasticities varied from -3.64 to 24.32. Despite a number of negative population elasticities, the majority of the population elasticities were positive. This was expected as increasing an area's population would increase the transit rider base. The employment elasticities ranged from -28.2 to 6.5. It was surprising that there were many

negative employment elasticities. It would be expected that job creation would lead to more transit work trips. These negative elasticities may be due to the correlation between jobs and population. In many cases, increasing an area's population leads to more jobs. When this happens, the model captures this impact in only one of the variables and produces a counterintuitive elasticity for the second variable. The gasoline elasticities ranged from .15 to 1.267. These elasticities are reasonable as increasing gasoline prices would be expected to increase transit ridership as people would choose to move from cars to buses.

Despite the wide range of control variable elasticities, adding the control variables did improve the fare elasticity results. Adding the control variables increased the R squared statistic for the vast majority of the regressions. The fare elasticities calculated via regressions with control variables were much closer to the industry accepted ranges than the stand alone fare elasticities.

5.5 Systemwide Fare Elasticity

A fare elasticity was calculated for OCTA as a whole. For this system-wide elasticity, the analysis included the data for all route categories, rider groups, and all fare types for which fare level and boarding data was available. The overall fare elasticity as calculated based on the above data and methodology is approximately -0.30, meaning that a 1% increase in OCTA fare prices will result in a 0.3% decrease in overall ridership. From a statistics perspective, this fare elasticity is considered relatively price inelastic, since it has an absolute value less than one. An inelastic result for fares means that OCTA riders are relatively insensitive to fare changes, and increases or decreases in fare levels will not result in proportionate changes in ridership. These results are in line with fare elasticities observed at other fixed route transit agencies. Bus operator price elasticities typically range from -.12 to -.85 with a mean elasticity of -.40.¹

5.6 Fare Elasticities by Pass Type and Route Category

In order to ascertain specific impacts of fare increases on specific fare combinations, elasticities were calculated for each fare combination. The estimated elasticities are listed below. There is a mix of positive and negative elasticities. It appears that the substitution effect is occurring, as consumers appear to be moving from one fare type to another. The power of the substitution effect is unclear from the data available and methodology used. More information would be needed about consumer preferences to gauge the power of the substitution effect, such as a stated-preference survey which asks riders to provide input on cross-price elasticities (i.e. "if your preferred product increased in price by \$1, would you choose a different product?").

Due to the shifts between fare types and overarching ridership trends, the fare elasticities show a high number of statistically insignificant elasticities. Statistically insignificant elasticities imply that factors other than price are having a large impact on ridership. For example, increasing service may increase

¹ TCRP Report 95: Chapter 12 - Transit Pricing and Fares: Traveler Response to Transit System Changes, TRB 2004.

overall ridership even as fare increase. As a result the elasticities estimated displayed a wide range of large positive to large negative values. Positive elasticities imply that increasing the price of a fare produce would increase the ridership from that product. This behavior runs contrary to general economic theory, which states that demand for a good will decrease as the price increases. Given these results, elasticities were aggregated by fare product and then by service type.

5.7 Elasticities by Fare Product

Given the counter intuitive elasticities estimated using highly disaggregate data, the data was aggregated to a higher level. Once the aggregation was completed, elasticities were then estimated for each of the fare products. The results of this analysis are listed below.

Aggregating the data by fare product did greatly reduce the variance of the estimated elasticities. However, the overall range is still outside the industry accepted boundaries. Overall, the elasticities range from -3 to 6, which is far outside the industry accepted range of -.12 to -.85.

The wide range of elasticities and the presence of positive elasticities can again be partly explained by pass migration. Other factors may contribute to pass migration. Advertising and promoting particular fare products may entice customers to switch to new fare products. Introducing new fare products, such as OC Link pass in 2009, may pull riders from other fare products. This then leads to unreliable estimates as it becomes difficult to separate the change in ridership due to fare increase and due to pass migration.

5.8 Elasticity by Route Category

Elasticities were then calculated by route category. The results of this estimation are listed below in Exhibit 5-2. All of the elasticities produced by this model have the correct sign. This aggregation method also produced a much more reasonable range of elasticities. This range of elasticities, -.04 to -.45, is relatively close to the range of -.12 to -.85 found by the analysis included in the TCRP report.¹ The local bus elasticity found in this analysis is close to the mean bus service elasticity found by the TCRP of -.40². Additionally, overall confidence in the estimates greatly improved relative to the fare elasticity by pass type estimation. Now both of the fare elasticities fall within the 95% confidence level.

² TCRP Report 95: Chapter 12 - Transit Pricing and Fares: Traveler Response to Transit System Changes, TRB 2004.

Exhibit 5-2. OCTA Fare Elasticities by Route Category

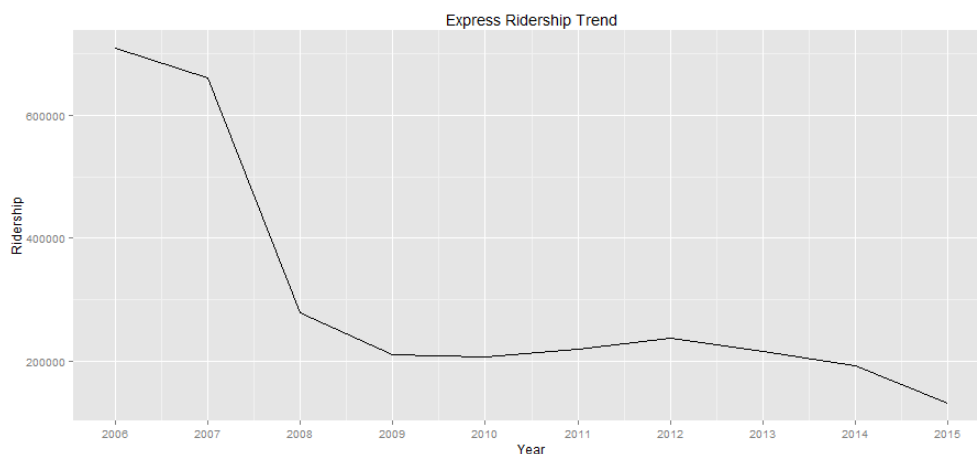
Elasticities By Fixed-Route Service Category			
Route Category	Elasticity	95% Confidence Level *	Acceptable Range
EXPRESS BUS	-0.04	Yes	Yes
LOCAL	-0.45	Yes	Yes

* If 95% Confidence Level = Yes, there is only 5% chance elasticity value was incorrectly estimated.

This method of aggregation has an inherent advantage over aggregating by fare product. This method combines all pass types for each route category. This reduces the impact of pass migration, because the analysis only depends on the total change in ridership for each route category. It is also expected that price changes would have little impact on migration to different route categories. The route categories generally correspond to specific trip purposes, and it is unlikely that increasing the price of local service would cause riders to migrate to express bus routes which serve different destinations.

The elasticity for express bus ridership is much smaller than expected. Previous studies and industry standards suggest that express service elasticities should be relatively closer to those for other services. The low elasticity can partly be explained by the trend of express bus ridership during this period. The graph below shows the overall express bus ridership trend over the study period. Ridership decreased dramatically from 2007 to 2008. This decrease corresponds to the 2008 recession. After this initial decrease, ridership for express service holds fairly steady. Both of these factors contributed to the low elasticity. The impact of the recession was likely controlled for by the population and employment variables, and the steady ridership seems to imply that express service riders are not very responsive to price changes.

Exhibit 5-3. OCTA Express Ridership Trends



Given the low number of relevant control variables it is difficult to determine whether the ridership trend for express bus service is being influenced by other factors not included in this study or if express bus service is generally highly inelastic.

5.9 Summary of Fare Elasticities

Based on fare modeling and analysis, it has been our experience that it is preferable to work with fare elasticities that have been calculated for the transit industry, such as those developed by APTA and TCRP, and to use agency-specific data to make adjustments to the industry averages. The issues that we have had in calculating fare elasticities specific to OCTA are compounded by the fact that the data sample includes a significant portion of the recession.

Our previous efforts to develop fare agency-specific elasticities have concluded that it is difficult to cleanly estimate the direct response of an agency's riders to fare changes. During our previous studies, the ranges of fare elasticities calculated for individual fare changes have been substantial, and in some cases positive elasticity values were calculated, indicating that it is not possible to cleanly estimate the direct response of an agency's riders to recent fare changes separately from external factors such as fuel prices and the economy. Significant fluctuations in ridership levels, year-over-year and month-over-month, are also indicative of data reliability issues, reinforcing the concern about using the data to calculate agency-specific elasticities.

By blending elasticities calculated from the four levels of aggregation, we are able to make the most defensible set of recommendations. Priority will be given to elasticities which are both highly significant and within the accepted range. However in some cases, theory and industry experience may suggest that a different elasticity may be more appropriate. In this case, the analysis will weigh the tradeoff between statistical confidence and the final elasticity value. For this purpose, we have primarily used the elasticities calculated from the route category level regression model. These results will serve as the default because the elasticities produced from this modeling technique fell most closely into the industry accepted range. The elasticities estimated by fare product will be used if it is determined that the fare product elasticity is more appropriate for a particular fare combination than the route category based elasticity. The elasticities for the local, community, seasonal, and Bravo services will serve as the default elasticity for the different fare combinations. The route category elasticity for express service will not be used given that this elasticity falls outside the industry accepted range. The system wide elasticity will be used as the default for the express service route category. This elasticity is preferable because it falls within the accepted range of $-.12$ to $-.85$, but is on the lower end. This is intuitive as one would expect express service to serve more employment related trips which are more inelastic than other trip purposes. Given the issues described in the previous section, the direct elasticities estimated for each fare combination will not be used.

Exhibit 5-4 summarizes the fare elasticities recommended for the OCTA Fare Study. These fare elasticities are constant across fare products within a given service category, with the exceptions of the College Semester Pass and the Metrolink transfer.

Exhibit 5-4. Recommended OCTA Fare Elasticities

Fare Elasticities by Pass Type and Route Category		
Pass Type	LOCAL	EXPRESS BUS
Full Cash Fare	-0.45	-0.3
Senior Disabled Cash	-0.45	-0.3
Day Pass	-0.45	X
7 Day Pass	-0.45	X
Monthly Pass	-0.45	-0.3
College Semester Pass	-0.31	-0.31
College Quarter Pass	-0.45	-0.3
U Pass	-0.45	-0.3
Employer Pass	-0.45	-0.3
Youth 30 Day Pass	-0.45	X
Summer Youth Pass	-0.45	X
Metrolink Transfer	-0.26	X

The majority of the recommended elasticities were sourced from route category level regression models. These elasticities were the closest to the mean bus service elasticity recommended by the TCRP. Our analysis was fairly conservative when deviating from the route category elasticities. First, it needed to be determined that there was a compelling reason to utilize an elasticity estimated from the fare product specific models. Secondly, only elasticities with lower values than the route category estimates were considered for substitution. Fare elasticities for express bus service were adjusted to -0.30.

The College Semester Pass elasticity (-.31) was substituted into the table. It is reasonable to assume that this pass product may be more inelastic as it may serve fewer discretionary trips. Additionally, the Metrolink Transfer elasticity (-.26) was also substituted into the table. It is likely for these trips to include a high number of work based trips, and it is reasonable to assume that such trips are less responsive to price than other trip purposes.

5.10 FARES Analysis Tool

In order to assess the impact of the fare structure, payment, and pricing alternatives on system wide ridership and revenue, an analysis tool must be capable of modeling with reasonable accuracy how individual rider groups and travel markets respond to those changes. Different rider groups and markets tend to exhibit different levels of responsiveness to changes in fare prices. A level of responsiveness can be measured by each group's price (transit fare) elasticity. CH2M's FARES model has been designed to identify both the relevant rider groups impacted by a fare change and the fare elasticity (responsiveness) for each group.

The FARES model permits unlimited market segmentation – each market segment is defined as a particular group of riders based on fixed route service type (e.g., Local/Express), fare type (e.g. cash, passes, special fare programs), and rider category (e.g., adult, senior/disabled/Medicare, students). The system wide impact of the fare change is then the summation of the responses of these individual market segments, measured in terms of revenue and ridership changes resulting from changes in fare structures, policies, and pricing levels.

The OCTA baseline Fares model, which reflects OCTA's actual ridership and fare revenue for the base year of FY2015, was calibrated from the following two primary data sources:

- Fare Study Information.xlsx: This file was provided by OCTA on September 8. The worksheet "2015 Fare Type & Categories" provides FY2015 ridership and fare revenue by fare product and by rider category.
- PassRptCollege Nov 2010 to Present.xlsx" This file was provided by OCTA on September 8. The worksheet "Quantity" provides FY2015 pass sales by fare product. This information was used to estimate the average number of trips made per pass purchased.

Exhibit 5-5 shows the primary elements of the baseline Fares model. This includes the current unit price, average trips per fare paid, FY2015 base year ridership, and FY2015 base year fare revenue. For the rows towards the bottom of Exhibit 5-5 (starting from E-Pass and going down), the trips per fare paid were set at 1.0 and the current unit prices were set at actual fare revenue divided by actual ridership.

Exhibit 5-5. OCTA Baseline Fares Model

Service Type	Fare Type	Rider Group	Current Unit Price	Trips per Fare Paid	RiderShares	Ridership	Revenue
Local	Cash	Regular	\$2.00	1.00	16.438%	7,737,295	\$15,175,225
Local	Cash	Senior/Disabled	\$0.75	1.00	0.905%	426,162	\$605,805
Local	Day Pass	Regular	\$5.00	3.97	21.285%	10,018,861	\$12,615,790
Local	Day Pass	Senior/Disabled	\$1.50	3.74	13.997%	6,588,160	\$4,566,229
Local	7-Day Pass	Regular	\$25.00	17.91	0.778%	366,222	\$478,945
Local	7-Day Pass	Senior/Disabled	\$8.25	20.83	0.376%	176,958	\$68,342
Local	30-Day Pass	Regular	\$69.00	60.95	14.481%	6,816,341	\$7,681,196
Local	30-Day Pass	Senior/Disabled	\$22.25	62.81	13.195%	6,210,887	\$2,172,243
Local	30-Day Pass	Youth	\$40.00	40.25	5.704%	2,684,880	\$2,892,367
Local	5 Rides Pass	Regular	\$9.00	5.00	0.249%	117,051	\$234,426
Express	Day Pass	Regular	\$12.00	2.37	0.029%	13,838	\$66,838
Express	Day Pass	Senior/Disabled	\$10.00	2.24	0.003%	1,516	\$6,822
Express	30-Day Pass	Regular	\$187.50	36.38	0.092%	43,515	\$233,262
OC Express	Day Pass	Regular	\$8.00	2.62	0.010%	4,899	\$9,610
OC Express	Day Pass	Senior/Disabled	\$7.00	2.48	0.001%	338	\$544
OC Express	30-Day Pass	Regular	\$125.00	40.29	0.031%	14,586	\$52,951
Local	30-Day College Pass	College	\$46.00	45.10	0.051%	23,903	\$24,383
Local	75-Day College Pass	College	\$115.00	100.01	0.121%	56,803	\$62,343
Local	120-Day College Pass	College	\$185.00	167.21	0.487%	229,084	\$259,907
Local	Summer Youth Pass	Summer Youth Pass	\$20.00	25.50	0.545%	256,367	\$169,216
Local	E-Pass	E-Pass	\$1.01	1.00	1.662%	782,458	\$792,267
Local	U-Pass	U-Pass	\$0.89	1.00	0.452%	212,617	\$189,733
Local	CSUF	CSUF	\$1.00	1.00	1.593%	749,903	\$753,251
Local	Metrolink Transfer	Metrolink Transfer	\$1.00	1.00	0.953%	448,438	\$449,006
Local	Metro Transfer	Metro Transfer	\$0.29	1.00	1.065%	501,434	\$146,254
Local	Other Inter-Agency Transfer	Other Transfer	\$0.00	1.00	0.174%	81,724	\$306
Local	Access Pass Fare	Access Pass Fare	\$0.25	1.00	0.613%	288,626	\$72,155
Local	Personal Care Attendant	PCA	\$0.25	1.00	0.184%	86,691	\$21,672
Local	Other Agency Access	Other Agency Access	\$0.00	1.00	0.029%	13,576	\$0
Local	Mobility	Mobility	\$0.00	1.00	0.257%	120,764	\$0
Local	Free Ride	Free Ride	\$0.00	1.00	2.746%	1,292,627	\$0
Local	Promotion	Promotion	\$0.00	1.00	0.320%	150,477	\$260
Local	Misread Pass	Misread Pass	\$0.01	1.00	1.158%	544,888	\$3,642
Local	Other	Other	\$0.00	1.00	0.016%	7,573	\$0

6. Conceptual Options

6.1 Evaluation Criteria

The fare study goals serve as the foundation for specifying criteria by which conceptual options to improve the fare structure will be evaluated. Exhibit 6-1 provides a summary of the proposed evaluation criteria, which are described in detail in this section. The evaluation criteria relate to the fare study goals. Improving equity, increasing ridership, encouraging simplicity, and minimizing the impact to fare revenue are listed as fare study goals and can be directly analyzed. The goal of improving customer service relates to both evaluation criteria 1 and 2. Evaluating this goal requires analyzing an alternative's impact on both simplicity and ease of use. While not listed as a major goal, it is important to evaluate the requirements to implement each alternative. Alternatives which are easier to implement will be favored over similar alternatives which require significant additional resources. Note that the first four evaluation criteria (ease of use, simplicity, ability to implement, and equity) are mostly qualitative in nature. The last two evaluation criteria (impacts on ridership and fare revenue) are quantitative, to be assessed through the CH2M FARES model later in the study process.

Exhibit 6-1. Summary of Evaluation Criteria for Conceptual Options

Evaluation Criteria	Description
1. Improves Ease of Use	Makes the fare system easier to use by customers and to manage by OCTA.
2. Contributes to Simplicity	Streamlines the fare structure by eliminating unnecessary complexity or focusing on specific needs.
3. Ability to Implement	Ability to be implemented, maintained, and enforced without significant capital and operating resources.
4. Improves Equity	Makes the fare structure more equitable to passengers, OCTA, and/or external stakeholders.
5. Impact on Ridership	Potential to increase OCTA ridership.
6. Impact on Fare Revenue	Potential to increase OCTA fare revenue and increase the farebox recovery ratio.

Criteria 1: Improves Ease of Use

Improving ease of use of the fare system can lead to greater customer satisfaction and easier administration by OCTA. Fare payment that is difficult or cumbersome can frustrate current riders and act as a barrier for new riders. Factors which reduce complexity in pass purchase, fare media usage, and making transfers will be considered for each conceptual option. The analysis will consider the impacts that fare policy options will have in improving customer service for existing riders and the potential to attract new riders.

Criteria 2: Contributes to Simplicity

A streamlined fare system is easier for customers to use and for OCTA to implement and enforce. The analysis will consider the degree to which conceptual options streamline fare enforcement, fare media,

and fare products. Policies which streamline more than one factor will receive a high score for contributing to simplicity. Additionally, those that make a significant impact to one category will also receive a high score.

Criteria 3: Ability to Implement

Procurement, fare collection technology, bus operations, equipment maintenance, and external agreements will all be considered in the ability to implement. Conceptual options which can be implemented with minimal time or resource commitments will achieve a high score for this criteria. Options which require moderate adjustment of media, technology, or external agreements will receive a medium score for ability to implement. Options which require significant replacement of fare collection technology and media will receive a low score for ability to implement. A low score will also be given to options that are not compatible with OCTA's long term service and technology plans.

Criteria 4: Improves Equity

Equity impacts will be primarily analyzed with respect to economic equity, both for the rider and for OCTA. Economic equity analysis will consider an option's ability to make the fares more closely reflect operating costs and/or value of service provided. The analysis will first determine whether an option has an impact on economic equity, then it will determine the magnitude of the impact. For example, distance based fares would be noted as having a high impact on equity, as longer trips are generally more expensive for OCTA to provide and have more value for riders.

While the primary focus will be on economic equity, the analysis will also consider impacts in regards to social equity. This is particularly relevant for federal Title VI regulations, in which fare structure changes must be evaluated with respect to disparate impacts on minority populations and disproportionate burdens on low-income populations. Disparate impacts and disproportionate burdens could relate to average changes in fare levels, as well as ease of access to fare products and fare media.

Criteria 5: Impact on Ridership

Conceptual options will be evaluated with respect to their ability to generate additional OCTA ridership. Factors that could lead to ridership growth include reductions in fares, enhancing the ease of using services, and fare promotions.

Criteria 6: Impact on Fare Revenue

Fare revenue and ridership have a particular relationship that makes it challenging to meet both objectives at once. Increasing fare prices will increase the revenue per rider and generally increase total fare revenue, but will typically decrease ridership. Also, changing fares for one product can cause some customers to migrate to different fare products. The analysis will consider the following impacts: overall fare revenue increase, revenue per rider, and migration to other fare products.

6.2 Overview of Conceptual Options

The options listed in Exhibit 6-2 are potential fare policy concepts, with an assessment of how well they serve OCTA's qualitative fare policy goals and objectives. Options were ranked as having a low, medium, or high impact in regards to advancing a policy goal or objective. Low impact implies that an option does not significantly contribute to a given objective. Medium impact implies that an option can significantly contribute to a given objective depending on how the option is implemented. High impact implies that an option will significantly contribute to a given objective. The options are organized by timeframe with regards to planning and implementation:

- Short term options are intended for consideration within the next one to two years.
- Medium term options are intended for consideration in the next three to five years.
- Long term options are intended for consideration in the next six to ten years.

Exhibit 6-2. Summary of Conceptual Options

Conceptual Option	Improves Ease of Use	Contributes to Simplicity	Ability to Implement	Improves Equity
Short Term Options (1 to 2 years)				
A1. Reduce Cash Fare from \$2.00 to \$1.50	Medium	Low	High	Low
A2. Reduce Day Pass from \$5.00 to \$4.00	Medium	Low	High	Low
A3. Discounted Youth Cash Fare at \$1.25 and Youth Day Pass at \$3.00	Low	Low	Medium	Medium
A4. Re-categorize Express Services	Medium	High	High	Medium
A5. Eliminate 5-Rides Pass and 7-Day Pass	Low	High	High	Low
A6. Offer Discounted Rides to Veterans	Low	Low	Medium	Medium
A7. Implement ACCESS Zone Fares	Low	Low	Medium	High
A8. Incentivize Mobile Ticketing and Pilot New Mobile Fare Products	High	Low	Medium	Low
A9. Enforce Reduced Fare Eligibility Requirements	Low	Low	Medium	High
A10. Scale Back Free Fare Promotions	Low	Medium	Medium	High
A11. Streamline Interagency Agreements	Low	High	Low	High
Medium Term Options (3 to 5 years)				
B1. Convert Cash Fare to a Two-Hour Pass	Medium	Low	Low	Medium
B2. Eliminate 30-Day C-Pass	Low	Medium	High	Low
B3. Develop Urban/Suburban Fare Structure	Low	Low	Low	Medium
B4. Develop New Specialized Fare Products	Medium	Low	Medium	Low
Long Term Options (6 to 10 years)				

C1. Implement Distance-Based Fares	Low	Low	Low	High
C2. Consider Fare Capping, Bonuses, and Other Innovative Fare Policies	Medium	Low	Low	High

Each conceptual option is described next. The projected impacts of each alternative on ridership and fare revenue are provided in Section 7.

6.3 Short Term Conceptual Options

A1. Reduce Cash Fare from \$2.00 to \$1.50: Reducing OCTA’s cash fare would be an effective way to increase ridership, with corresponding revenue loss. However, reducing the cash fare would also have large implications for ACCESS service. Due to ADA mandates, reducing the cash fare would also result in the need to lower ACCESS fares, which would result in lower ACCESS revenue and an increase in ACCESS operating costs due to increased trips.

A2. Reduce Day Pass from \$5.00 to \$4.00: Reducing the day pass from \$5.00 to \$4.00, or decreasing the day pass multiple from 2.5 to 2.0, would effectively provide free transfers for riders making two linked trips during the day. This option promotes many of OCTA’s fare policy goals, and would not require creating new fare media or changing enforcement policies. This option would also not require a reduction in ACCESS fares.

A3. Discounted Youth Cash Fare at \$1.25 and Youth Day Pass at \$3.00: For transit agencies that offer youth discounts, it is typical for the discount to be set in-between the full adult and senior/disabled discounted fare. Implementing a discounted youth fare cash fare at \$1.25 and a youth Day Pass fare of \$3.00 would provide a discount of about 40% relative to the regular fare, which is similar to the current percentage discount provided for the youth 30-Day Pass. With this option, bus operators would need to take on additional responsibilities to enforce eligibility requirements of discounted youth fares.

A4. Re-categorize Express Services: OCTA currently operates two types of inter county express bus services, Express and OC Express. Express bus service provides service to Los Angeles County, while OC Express provides service to Riverside County. Both services serve similar trip types, but have different fare levels and fare products. Consolidating the two express service fares into a single Inter County express service fare would simplify the overall fare structure and reduce the number of fare products. Consolidating fare media would also allow customers to take trips to both Los Angeles and Riverside counties using one product. OCTA operates five Intra County bus routes that have express-like service, the 200 routes. These routes have limited stops and shorter service spans. Intra County Express routes charge the local bus fare levels, however these routes have longer average trip lengths. Charging higher fares for Intra County Express routes would make these routes more equitable for the service provided. Additionally, separate fare media and branding for the Intra County Express service would increase customer awareness of the Intra County Express routes offered by OCTA. Exhibit 6-2 displays the proposed naming changes to the express services.

Exhibit 6-2: Summary of Express Service Changes

Current Express Service	Recategorized Express Service
Express	Express
OC Express	Express
Local #200 Routes	OC Express

A5. Eliminate 5-Rides Pass and 7-Day Pass: The 5-Ride card accounted for only about 0.25% of OCTA's FY2015 ridership. Phasing out the 5-Ride card would improve ease of use, since 5-Ride cards are operated differently than period passes (Day, 7-Day, and 30-Day passes). Period passes are sold on magnetic stripe media, which are swiped through a magnetic reader on the farebox. The 5-Ride cards are time stamped cards which are validated by a separate component on the farebox. Removing the 5-Ride card would streamline fare media operation and potentially reduce maintenance costs.

The 7-Day Pass bridges the affordability gap between the Day and 30-Day pass products. However, the 7-Day Pass is not a well utilized fare product (about 1.2% of OCTA's ridership) and contributes to a more complex fare structure.

A6. Offer Discounted Rides to Veterans: With this option, veterans would be eligible for discounted transit rides on OCTA fixed route service. Setting the veteran discount equal to the senior/disabled discount would be consistent with peer agency discounts. Veteran status would be verified on the basis on specified identification cards, including Veterans Affairs (VA) issued ID, military ID, and/or California Department of Motor Vehicles (DMV) issued veteran-specific driver's license. In November 2015, the California DMV started offering veteran specific drivers licenses. These could be used as a form of identification; however, their adoption may be slow. Given the five-year validity of California driver's licenses, it may take up to five years for all of Orange County veterans to switch to the new licenses. The following peer agencies with veteran/active duty discount programs were identified:

- Metrolink in Los Angeles, CA: Offers a 10% discount on one-way and round trip tickets for active duty military.
- RTA in Riverside, CA: Offers discounted rides to all veterans with VA issued ID. The discount is equivalent to the Senior/Disabled discount. Discounted cash fare, day pass, and 30 day passes are available.

A7. Implement ACCESS Zone Fares: Americans with Disabilities Act (ADA) regulations allow transit providers to charge up to twice the fixed route cash fare for a comparable paratransit trip. OCTA's current cash fare on fixed route services is \$2.00, so the maximum allowable ACCESS fare is \$4.00. OCTA currently buys down each ACCESS fare by \$0.40 (10%) using Renewed Measure M (or M2) dollars, resulting in a current charge to ACCESS passengers of \$3.60. The ACCESS fare buy down is part of the voter-approved M2 sales tax measure. The funds available to provide the subsidy through M2 Project U: Expand Mobility Choices for seniors and Persons with Disabilities have not been increasing at the same

rate as ACCESS ridership. OCTA has recently taken steps to continue funding the ACCESS subsidy over the long-term by shifting funding between M2 programs and providing additional funds to Project U.

OCTA has the option to charge more for longer ACCESS trips that cost more to operate. For fixed route trips that a rider would need to make a transfer from one bus to another in order to complete the trip, OCTA's cash fare is \$4.00 (\$2.00 per boarding). For comparable trips on ACCESS (i.e., for an ACCESS trip between two points that on fixed route service would require making one transfer), the maximum allowable ADA fare would be \$8.00, or two times the comparable fixed route fare. OCTA's Day Pass, which currently costs \$5.00, is not a factor in this calculation as the regulations are based on the fixed route cash fare.

One way to charge higher fares for longer ACCESS trips is to implement a zoned ACCESS fare structure. Transit operators that have implemented zones on ADA paratransit services include Omnitrans in San Bernardino County, MTS in San Diego, and the Riverside Transit Agency (RTA) in Riverside County, all located in Southern California:

- Omnitrans. Omnitrans has a fixed route cash fare of \$1.75, and a base ACCESS fare of \$3.25 (1.9 times the fixed route cash fare).

The Omnitrans ACCESS service area is divided into six zones, in a linear fashion from east to west. ACCESS fares are higher for trips that cross into four or more zones. The fares are as follows: \$3.25 for 1 to 3 zone trips, \$4.25 for 4 zone trips, \$5.25 for 5 zone trips, and \$6.25 for 6 zone trips. For ACCESS trips of 4 to 6 zones, the comparable fixed route trip would require making at least one transfer.

- MTS. MTS has fixed route cash fare of \$2.25. MTS implements a zone based paratransit fare structure with a base Access fare of \$4.50

The MTS Access service area is divided into four zones. MTS has aligned most local bus routes to approximately correspond to Access zones. Many local routes are contained within a given Access zone. Traveling between zones by local bus service may also require a transfer. Likewise, Access trips traveling between zones may require transfer to an additional Access vehicle. Access customers pay the \$4.50 fare for each transfer.

- RTA. RTA has a fixed route cash fare of \$1.50. RTA serves 18 cities in Riverside County with its local fixed route services, and uses a city-to-city pair matrix to determine the corresponding Dial-a-Ride fares. For each city-to-city pair, RTA has determined the lowest number of RTA fixed routes that are required to travel from one city to another:
 - If the trip between cities could be completed on one fixed route bus, the Dial-a-Ride fare is \$3.00 (2.0 times the fixed route cash fare).
 - If the trip requires at least two fixed routes, the Dial-a-Ride fare is \$6.00 (2.0 times two fixed route cash fares).
 - If the trip requires at least three fixed routes or more, the Dial-a-Ride fare is \$9.00 (2.0 times three fixed route cash fares).

By using city polygons to approximate the fare calculation, RTA indicated this approach is not as precise as calculating the actual number of fixed routes required to make trips between specific origins and destinations. RTA indicated that the Trapeze scheduling software has a fixed route module available that could make this calculation for specific origin-destination pairs. However, in RTA's case, RTA does not believe the annual licensing fee to obtain and run the Trapeze fixed route software would pay for itself with respect to more Dial-a-Ride fare revenue being collected, so RTA is fine with its current city-to-city pair approximation.

A8. Incentivize Mobile Ticketing and Pilot New Mobile Fare Products: Mobile ticketing is a growing trend among peer transit agencies. OCTA has been developing mobile ticketing since piloting a mobile ticketing app for the OC Fair in 2014. Currently there are plans to expand mobile ticketing to specific OCTA services (College, Express) before implementation to the full fleet. The initial phase is expected to launch in the coming year. Mobile ticketing reduces the need for fare media distribution, sales outlets, and farebox maintenance. It also has the potential to attract tech-savvy riders that are accustomed to mobile technology, a market that has increased substantially over the past few years.

While tech-savvy riders may naturally migrate to mobile ticketing, incentivizing mobile ticketing usage may speed up adoption. Incentives currently employed by transit agencies include one-time promotions and discounted fares. Other options include providing free passes or value to a limited number of early adopters. Funding for an incentive program could be sourced from Cap and Trade funds that OCTA receives from the Greenhouse Gas Reduction Fund.

The introduction of mobile ticketing also brings an entire class of potential new electronic products that are not possible with existing technology. Stored value, or electronic cash, allows customers to pre-purchase an amount of money that is deducted each time they ride. This intuitive form of payment is well understood, and allows for more innovative bonuses and incentives. For example, customers could be given bonus value for purchasing or riding a minimum amount. In addition, new fare products such as rolling 24-hour or weekend passes could be more easily introduced.

A9. Enforce Reduced Fare Eligibility Requirements: Reduced fare products can currently be purchased online, at retail outlets, or at the OCTA store with no restrictions. Reduced fare enforcement only occurs during boarding if riders present proper ID to bus operators. Many different forms of ID are accepted for senior and disabled reduced fare passes. This places a burden on bus operators and can lead to increased dwell time delay and potential disputes. Placing greater emphasis on reduced fare enforcement at the point of sale would simplify the boarding process and reduce conflicts. Point of sale enforcement would also reduce the potential for fare abuse and fare leakage.

Requiring an eligibility process before purchase of reduced fares is common practice at most U.S. transit agencies. For example, reduced fare customers using Los Angeles Metro services must first apply for specialty TAP cards which allow customers to purchase discounted fare products. Mail-based pass renewal could be used to ensure that passes are sent only to pre-approved senior/disabled riders. The discounted fare eligibility process can also be rolled out via mobile app. The mobile app can be configured to only allow registered discounted fare customers to purchase discounted fares. Once a

discounted fare customer complete a predefined eligibility process, their account can be granted permissions to purchase discounted fare products.

A10. Scale Back Free Fare Promotions: OCTA confirmed that the majority of free ridership on OCTA buses are children ages 5 and under. However, FY2015 data indicates that 120,764 free boardings were made by “Mobility” riders; 95,818 free boardings were made with a promotional day pass; and 16,667 free boardings were marketing and promotional ridership. There may be opportunities to reduce some of these free fare promotions that aren’t critical or mandated in order to help revenue impacts.

A11. Streamline Interagency Agreements: Interagency transfers allow customers to transfer between OCTA and other regional transit agencies. Proof of payment or visual transfers can be difficult to understand by customers, since transfer rules are not always clear or consistent between operators. They are also difficult to enforce since operators need to inspect each transfer and usually do not accurately tally usage. Transfers made with the LA Metro TAP card cannot be enforced properly since OCTA drivers cannot electronically validate the cards. Invalid transfers result in enforcement difficulties for operators and lost revenue. Modifying transfer agreements to reduce the number of valid fare media and/or change the reimbursement rate could potentially reduce transfer abuse, improve simplicity, and increase fare revenue. Transfer agreements can be renegotiated when the current agreements expire, however OCTA has expressed an interest in working with the connecting agencies to modify current transfer agreements

Agreements in which transfers are validated by visual inspection have potential for abuse. In some cases, it may not be possible for drivers to determine the validity of the presented pass, such as the TAP card. Eliminating the acceptance of media that cannot be properly enforced would reduce the potential for fare abuse. However, this may prove difficult to negotiate with external agencies. Additional options include: further streamlining accepted fare media, limiting transfer points, and installing smartcard readers to verify smart card validity.

6.4 Medium Term Conceptual Options

B1. Convert Cash Fare to a Two-Hour Pass: A two-hour pass would allow riders to complete a one-way trip that involves transfers at a lower fare than a Day Pass, if these riders are not planning to make a round trip. A two-hour pass would also allow riders who make short trips for shopping or errands to complete a round trip at a lower fare than a Day Pass.

It would be more cumbersome from a fare media production and enforcement perspective to introduce a two-hour pass separately from smart card or mobile ticketing technology. Los Angeles Metro provides two-hour passes on smart card media, which reduces challenges associated with fare media costs and enforcement.

B2. Eliminate the 30 Day C-Pass: The C-Pass program includes three types of passes: 30-day, 75-day, 120-day local service passes. A total of 11 colleges in Orange County participate in the C-Pass program. Based on FY2015 data, the average fare per trip for the C-Pass fare products are as follows:

- 30-Day C-Pass: 23,903 boardings; \$24,383 in revenue; \$1.02 average fare per boarding

- 75-Day C-Pass: 56,803 boardings; \$62,343 in revenue; \$1.10 average fare per boarding
- 120-Day C-Pass: 229,084 boardings; \$259,907 in revenue; \$1.13 average fare per boarding

The 120-Day C-Pass is the most successful of the three C-Pass types, with respect to total ridership and average fare per boarding. However, the 30-Day C-Pass is the most recent and could be monitored to see if adoption increases over time.

B3. Develop Urban/Suburban Fare Structure: Current OCTA local bus service covers both urban and suburban areas. Urban routes are focused in OCTA's core service area including Anaheim, Orange, and Santa Ana, and generally follow a grid-based service pattern. Suburban routes in locations including South Orange County operate over longer distances, have fewer stops per mile, and have higher operating costs than urban service. Differentiating fares for urban and suburban services would allow the agency to account for the higher cost of providing suburban service. However, there would be corresponding impacts to ACCESS service, where revenue would decrease and operating costs would increase.

B4. Develop New Specialized Fare Products: Orange County is home to famous attractions that draw local, national, and international visitors. Visitors to these attractions represent a large market of potential transit riders. Offering specialized fare products and/or services to tourists could help to capture potential riders. Anaheim Resort Transit (ART) offers many specialty services/passes to the visitor demographic. Most ART routes have stops at major Anaheim attractions, and ART passes can be purchased at lodgings near major attractions. The ART website includes trip planning support for bus routes near local attractions, hotels, and restaurants. These practices could be used by OCTA to attract tourist and visitor ridership.

Additionally, OCTA could consider specialty group fare products to cater to specialty groups. These products could include offering a family based pass. This pass type of pass would allow multiple family members to board with one piece of fare media.

OCTA could consider making the Perk Pass available to additional organizations, including high schools and trade schools, social service agencies, and homeowners associations. Another option would be to introduce a subscription-based pass program for individuals, in which the Perk Pass concept could be extended to individuals who enroll in the program through credit or debit card payment.

6.5 Long Term Conceptual Options

C1. Implement Distance-Based Fares: All OCTA services operate on a flat fare structure. This allows customers to take long distance trips for a low fare. Moving to a distance based fare structure would allow fares to be more representative of operating costs. Charging fares based on actual distance traveled is the most equitable fare structure and is easy to understand. The Utah Transit Authority (UTA) currently charges a distance based fare on commuter rail service by using dual reader technology. Customers tap their smart cards on electronic validators upon boarding and exiting of the service. Fares are computed by the distance traveled. For OCTA, implementing a distance based fare structure would

require upgrading to smart card and/or mobile ticketing technology, ideally with readers at the front and rear bus doors to support tapping upon boarding and exit.

There are several types of distance-based structures. Zone-based systems may be relatively easier to implement. There are concerns of fare abuse as riders may try to use single zone tickets to take multi-zone trips. A true mileage-based fare would require customers to register fare media when both boarding and alighting buses. Currently, there are no bus operators which operate a true distance-based fare system, although UTA is pilot testing this on select bus routes. Advances in fare technology will ease implementation of distance based fares in the future. It is suggested that OCTA explore distance based fares going forward; however, whether to implement this will depend on OCTA's long term fare media/policy goals.

Some transit agencies, including WMATA in Washington D.C., employ time-based transit fares. Time-based fares can capture the additional costs of peak period travel, however implementation can be problematic. This structure requires the designation of peak and non-peak hours. It also requires the creation of an enforcement mechanism. Time stamping can be implemented to validate whether a transfer occurred during the correct time of day period. There is also a potential for fare abuse. Customers may attempt to board peak period service with off-peak period fare products. This in turn may lead to increased conflicts with drivers and delay. Therefore, time-based fares are not recommended.

C2. Consider Fare Capping, Bonuses, and Other Innovative Fare Policies: Innovative fare policies could achieve several fare study goals, and could offer an improved experience for customers. The Santa Clara Valley Transit Authority (VTA) has implemented a capped fare day pass. Customers purchase a day pass on a Clipper stored value smart card and are charged per ride up to the capped amount. Once the cap is reached, customers are not charged for boardings for the rest of the day. Minneapolis Metro Transit and Seattle King County Metro both charge differentiated fares for peak and off-peak trips. Policies which incentivize pre-purchase and smartcard usage can help to reduce dwell time associated with boarding. Phoenix Valley Metro charges a \$2.00 premium for purchasing day passes onboard the bus, to help with dwell times and farebox maintenance costs.

Additionally OCTA can implement policies which would standardize the overall fare table. Currently many fare products are priced at partial multiples of other fare products. For example, the full fare 30-Day Express Pass is currently priced at a 31.25 times the full cash Express fare. This can cause confusion to customers when purchasing passes and to administrative staff when considering fare increases. Standardizing pricing multiples can create an easier to understand fare structure and can facilitate easier future fare increases.

7. Evaluation of Alternatives

The ridership and fare revenue impacts for select conceptual options described in Section 6 were estimated using the FARES model. Exhibit 7-1 provides the summary modeling results. Each option was evaluated in a stand-alone manner, independent of other options. Impacts shown are annual. FARES modeling was not conducted for the following conceptual options that did not have specific quantitative measures – A8: Incentivize Mobile Ticketing and Pilot New Mobile Fare Products; B4: Develop New Specialized Fare Products; and C2: Consider Fare Capping, Bonuses, and Other Innovative Fare Policies. Options A8, B4 and C2 were qualitatively evaluated in this section.

Exhibit 7-1. Summary FARES Model Results

Conceptual Option	Impact on Ridership		Impact on Fare Revenue	
	Change, #	Change, %	Change, \$	Change, %
Short Term Options (1 to 2 years)				
A1. Reduce Cash Fare from \$2.00 to \$1.50	1,361,700	2.9%	-\$1,581,900	-3.2%
A2. Reduce Day Pass from \$5.00 to \$4.00	1,198,500	2.5%	-\$2,202,300	-4.4%
A3. Discounted Youth Cash Fare at \$1.25 and Youth Day Pass at \$3.00	1,062,100	2.3%	-\$1,291,500	-2.6%
A4. Re-categorize Express Services	-30,000	0.1%	\$149,500	0.3%
A5. Eliminate 5-Rides Pass and 7-Day Pass	-4,900	0.0%	\$30,900	0.1%
A6. Offer Discounted Rides to Veterans	260,800	0.6%	-\$252,900	-0.5%
A7. Implement ACCESS Zone Fares	-9,000	-0.5%	\$111,800	2.1%
A9. Enforce Reduced Fare Eligibility Requirements (20% Fraud Assumption)	-567,400	-1.2%	\$632,700	1.3%
A10. Scale Back Free Fare Promotions	-163,300	-0.3%	\$74,200	0.1%
A11. Streamline Interagency Agreements	-250,700	-0.5%	\$265,800	0.5%
Medium Term Options (3 to 5 years)				
B1. Convert Cash Fare to a Two-Hour Pass	1,627,500	3.5%	-\$2,561,800	-5.1%
B2. Eliminate 30-Day C-Pass	-800	0.0%	\$1,300	0.0%
B3. Develop Urban/Suburban Fare Structure	1,333,400	2.8%	-\$1,226,000	-2.5%
Long Term Options (6 to 10 years)				
C1. Implement Distance-Based Fares (Local/Express)	1,655,300	3.5%	\$1,976,300	4.0%
C1. Implement Distance-Based Fares (ACCESS)	218,700	13.2%	-\$1,213,700	-20.7%

For A7: Implement ACCESS Zone Fares, the ridership and fare revenue impacts shown would apply to ACCESS service, as opposed to fixed route service.

7.1 Evaluation of Short Term Options

A1. Reduce Cash Fare from \$2.00 to \$1.50: Reducing OCTA's cash fare for regular riders from \$2.00 to \$1.50, and the cash fare for senior/disabled riders from \$0.75 to \$0.60, is projected to have the following impacts:

- Ridership Change: Annual change of **+1,361,700 (+2.9%)**
- Fare Revenue Change: Annual change of **-\$1,581,900 (-3.2%)**

One important consideration with this alternative is the impacts on ACCESS fares. Because ACCESS fares can be priced at no greater than two times the corresponding fixed route fare, a reduction in the fixed route cash fare would also require reducing the ACCESS fare. At a fixed route cash fare of \$1.50, the ACCESS fare could be no greater than \$3.00.

Based on the Fares model, using a fare elasticity of -0.30 for ACCESS riders, if the ACCESS fare were decreased from \$3.60 to \$2.70 (assuming that OCTA would continue to buy down ACCESS fares by 10%), this would increase ACCESS ridership by about **148,100 (+9.0%)** annually and decrease ACCESS fare revenue by about **-\$1,070,100 (-18.3%)** annually. Using an operating cost of \$41.46 per ACCESS trip (based on 2014 NTD data), the ACCESS ridership increase would result in an extra **\$6,141,600 (+9.0%)** annually in ACCESS operating costs.

Based on the corresponding negative impacts on ACCESS revenue and operating costs, it would be difficult financially for OCTA to reduce its cash fare. It is not recommended that OCTA reduce the cash fare from \$2.00 to \$1.50

A2. Reduce Day Pass from \$5.00 to \$4.00: This option looked at changing the full fare Day Pass price. No change was made to the prepaid Day Pass. Reducing OCTA's Day Pass fare for regular riders from \$5.00 to \$4.00 (i.e., reduce Day Pass multiple from 2.5 to 2.0) is projected to have the following impacts:

- Ridership Change: Annual change of **+1,198,500 (+2.5%)**
- Fare Revenue Change: Annual change of **-\$2,202,300 (-4.4%)**

Compared with option A1, option A2 is projected to result in a smaller ridership increase but greater fare revenue loss. However, option A2 would not have the corresponding impacts on ACCESS ridership and operating costs. In addition, the operational impacts of changing the day pass would be relatively straightforward and welcomed by riders.

With this option, it is assumed that the existing senior/disabled Day Pass fare of \$1.50 would not change, as the senior/disabled Day Pass is already priced at a multiple of 2.0 relative to the senior/disabled cash fare. Overall, this option would increase ridership and would facilitate free transfers for riders taking two linked trips per day. OCTA could minimize the loss in revenue with available Low Carbon Transit Operations Program (LCTOP) funds. Therefore, it is recommended that OCTA reduce the Day Pass from \$5.00 to \$4.00.

A3. Discounted Youth Cash Fare at \$1.25 and Youth Day Pass at \$3.00: Providing a discounted youth cash fare of \$1.25 (37.5% discount), a discounted youth Day Pass fare of \$3.00 (40.0% discount), and a discounted youth 7-Day Pass fare of \$15.00 (40.0% discount) is projected to have the following impacts:

- Ridership Change: Annual change of **+1,062,100 (+2.3%)**
- Fare Revenue Change: Annual change of **-\$1,291,500 (-2.6%)**

This option assumed that about 20% of current regular riders paying with the cash fare, Day Pass, or 7-Day Pass would qualify for the youth discount. Compared to options A1 and A2, option A3 is projected to result in a smaller ridership increase and less fare revenue loss.

With this option, it is assumed that the existing youth 30-Day Pass fare of \$40.00 (42.0% discount) would not change, as this product is already discounted. This option would increase ridership at a relatively minimal loss in revenue. However, the youth discount option does present an enforcement concern as riders must validate their youth status. Many youth riders, especially those without driver's licenses, may not have a valid government issued id. While increasing ridership was listed as a major OCTA fare policy goal, the agency must be mindful of the overall impact to fare revenue. Adult ridership has substantially decreased during the past several years. As a result, it would be more efficient for OCTA to focus efforts towards fare policies which would increase adult ridership. Given the enforcement concerns and overarching OCTA ridership trends, it is not recommended that OCTA discount the youth cash fare and youth Day Pass.

A4. Re-categorize Express Services: Exhibit 7-2 displays the proposed naming changes to the express services.

Exhibit 7-2: Summary of Express Service Changes

Current Service	Recategorized Express Service
Express	Express
OC Express	Express
Local #200 Routes	OC Express

In addition to recategorized express service naming, pricing changes are suggested in order to make pricing more equitable for the service provided. Since OC Express routes operate like intra-county express routes, the fare would remain at \$4, while the inter-county express routes would increase to \$7 to reflect their increased service distance. The associated reduced fare and pass prices could be as follows: setting the Express regular cash fare at \$7.00, the Express senior/disabled cash fare at \$5.00, the Express Regular Day Pass at \$14.00, the senior/disabled Express Day Pass at \$12.00, and the Express 30-Day Pass at \$218.75, the OC Express regular cash fare at \$4.00, the OC Express senior/disabled cash fare at \$3.50, the OC Express adult Day Pass at \$8.00, the OC Express senior/disabled Day Pass at \$7.00, and the OC Express 30-Day Pass at \$125.00 is projected to have the following impacts:

- Ridership Change: Annual change of **-30,000 (-0.1%)**
- Fare Revenue Change: Annual change of **+\$149,500 (+0.3%)**
- This option would simplify OCTA's fare structure by consolidating Express fares with OC Express fares, and would have minimal impacts on ridership and fare revenue.

Recategorizing the express services would not have a major impact on ridership and revenue. However, it would help to make the express service more consistent and intuitive, and would also help to make express service fare more reflective of operating costs by including more intra county routes in express family. It is then recommended that OCTA re-categorize express services.

A5. Eliminate 5-Rides Pass and 7-Day Pass: The 5-Ride and 7-Day passes account for a very small percentage of OCTA's ridership. The full fare 7-Day pass accounts for 0.78% of total ridership. The senior/disabled 7-Day pass accounts for 0.38% of total ridership. The 5-Ride pass accounts for 0.25% of total ridership. Eliminating the 5-Rides Pass and the 7-Day Passes is projected to have the following impacts:

- Ridership Change: Annual change of **-4,900 (-0.0%)**
- Fare Revenue Change: Annual change of **+\$30,900 (+0.1%)**

This option would simplify OCTA's fare structure by eliminating seldom-used fare products, with minimal impacts on ridership and fare revenue. The majority of riders currently using these passes would migrate to other fare products. The 7-Day passes would automatically time out. The 5-Ride passes are not time sensitive and can be used as long as the onboard fareboxes have the 5-Ride stamp mechanism. Phasing out the 5-Ride card would require a customer marketing campaign detailing the final date of 5-Ride sales and acceptance. The period between the end of sales and acceptance should be long enough for customers to use their existing cards, typically six months to one year. It is recommended that the 5-Ride and 7-day pass be eliminated.

A6. Offer Discounted Rides to Veterans: Approximately 4.2% of Orange County residents are veterans. As an upper bound estimate, if OCTA were to introduce 50% discounted rides for veterans, the projected impacts are as follows (assumes a 70% ridership increase for 4.2% of OCTA's adult ridership base):

- Ridership Change: Annual change of **+260,800 (+0.6%)**
- Fare Revenue Change: Annual change of **-\$252,900 (-0.5%)**

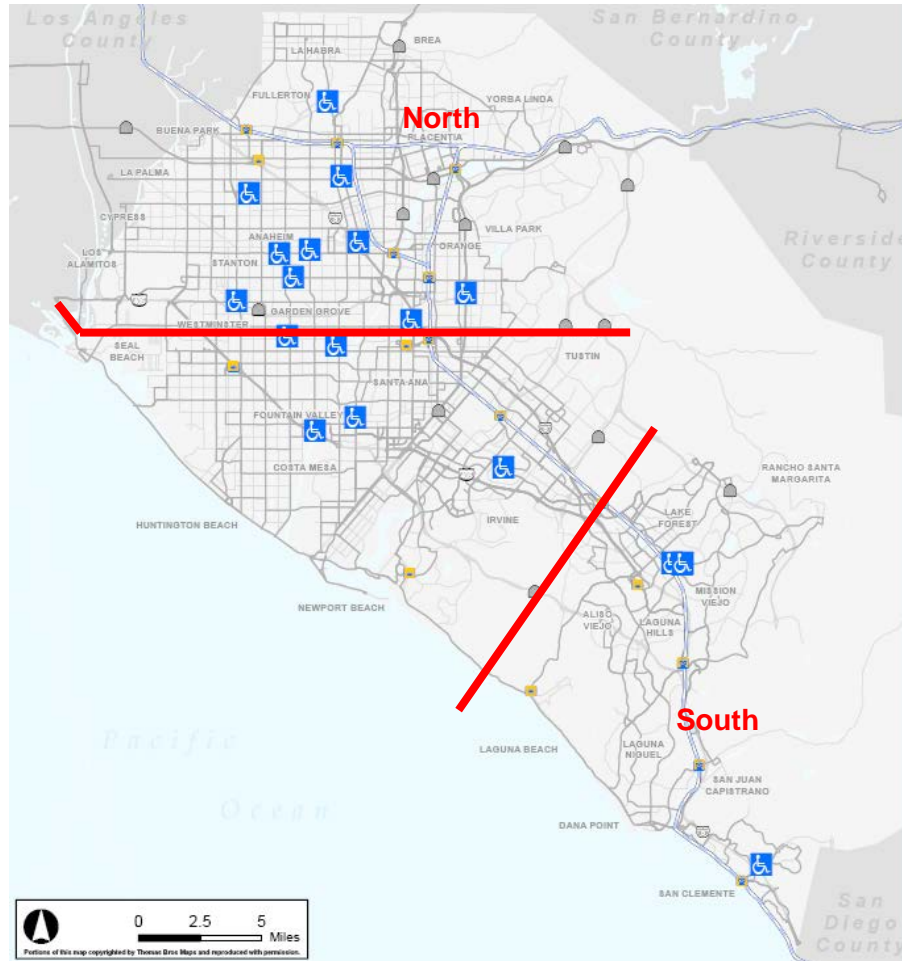
This estimate is difficult to pinpoint; data for the number of veterans in Orange County is available, but there is no data on the share of OCTA's existing ridership that veterans comprise. If OCTA were to enforce the policy with a veterans-ID card, it is unlikely that the ridership gain would be this large initially as it would take time to ramp up to the full population of veterans. This option would have similar enforcement concerns to current reduced fares products as OCTA would need to validate eligibility. If reduced fare eligibility is not enforced, then this option could lead to increased fare fraud. It

is recommended that OCTA offer reduced rides to veterans, contingent on increasing reduced fare eligibility enforcement.

A7. Implement ACCESS Zone Fares: Exhibit 7-3 is a map of OCTA's service area (including the 20 highest volume ACCESS locations, as determined from the year 2011 OCTA Transit System Study) divided into three possible fare zones:

- North. Approximately north of the SR 22 freeway; includes the following 14 cities in Orange County: Anaheim, Brea, Buena Park, Cypress, Fullerton, Garden Grove, La Habra, La Palma, Los Alamitos, Orange, Placentia, Stanton, Villa Park, and Yorba Linda. Also includes the following cities in Los Angeles County: Artesia, Cerritos, Hawaiian Gardens, La Mirada, Lakewood, Santa Fe Springs, and Whittier.
- Central. Approximately between SR 22 and the Irvine Spectrum area; includes the following nine cities in Orange County: Costa Mesa, Fountain Valley, Huntington Beach, Irvine, Newport Beach, Santa Ana, Seal Beach, Tustin, and Westminster. Also includes Long Beach in Los Angeles County.
- South. Approximately south of the Irvine Spectrum area; includes the following 11 cities in Orange County: Aliso Viejo, Dana Point, Laguna Beach, Laguna Hills, Laguna Niguel, Laguna Woods, Lake Forest, Mission Viejo, Rancho Santa Margarita, San Clemente, and San Juan Capistrano.

Exhibit 7-3. Potential ACCESS Zone Fare Structure



Currently, Route 83 and Route 1 are OCTA's only fixed routes that operate in all three zones, going as far north as the Disneyland area in Anaheim and as far south as the Laguna Hills Transportation Center in Laguna Woods. With the exceptions of Route 83 and Route 1, it is not possible to make a fixed route trip between the North and South zones on a single OCTA bus without making at least one transfer. This route structure would allow OCTA to establish a zoned ACCESS fare structure and charge up to \$8.00 (two times two fixed route cash fares) for ACCESS trips made between the North and South zones. Assuming OCTA continues to buy down ACCESS fares by 10%, the fare for these longer trips would be \$7.20. Fare exemptions could be made for locations within three-quarters of a mile along Route 83 and Route 1. If Route 1 and Route 83 were converted to OC Express service, then OCTA could charge up to \$8.00 (two times the OC Express cash fare) for ACCESS trips which may travel between the North and South zones. The higher fares for longer trips, between the North and South zones, would help to recover some of the costs of serving those long trips and may help to deter some customers from making long trips on ACCESS.

Recently conducted work found that about 3.0% of ACCESS trips were being made between these defined North and South zones. The average trip length for these North zone – South zone trips was about 30.4 miles, as compared to an average of 10.7 miles for all ACCESS trips.

Using an ACCESS fare elasticity of -0.30, if the ACCESS fare was increased from \$3.60 to \$7.20 for trips between the North and South fare zones, this would decrease ACCESS ridership by about **-9,000 (-0.5%)** annually and increase ACCESS fare revenue by about **\$111,800 (+2.1%)** annually. Analysis performed by OCTA suggested that reducing these very costly ACCESS trips would decrease annual operating costs by approximately **\$1,000,000**.

The projected impacts are small, but nevertheless put in a measure of cost control for ACCESS services and more closely relate the ACCESS fare to the cost of service provision. Zoned ACCESS fares would require a change in OCTA's fare policies and an adjustment period for both riders and operators. A zone based ACCESS system would help reduce the number of costly long distance paratransit trips, and would have little impact on the vast majority ACCESS trips. It is then recommended that OCTA adopt zone based ACCESS fares.

A8. Incentivize Mobile Ticketing and Pilot New Mobile Fare Products: OCTA has the unique opportunity of coordinating fare technology and fare policy together. In order to make mobile ticketing successful, fare policies should adjust to take full advantage of this new technology. As such, policy incentives are recommended to encourage adoption and optimize the customer experience. Since mobile ticketing replaces other high-cost sales channels such as retail outlets and fareboxes, it is in OCTA's benefit to pursue high mobile adoption. Potential approaches to encourage adoption could include:

- Early marketing for the mobile ticketing app to generate anticipation and a practical “interest list” for beta testing or special offers.
- Free rides or value to early adopters or targeted user groups when activating with a credit card.
- Differential pricing for mobile ticketing on certain product types.
- Mobile-only products such as stored value, fare capping, or free transfers.
- Ride bonuses, such as “1 free ride after every XX ticket purchases”.
- Priority access to new products or pilot programs, which can be tested much easier on a mobile platform.
- Mobile-only services, such as integrated trip planning or customer service feedback.

OCTA currently operates a day pass incentive program targeted towards new riders. Mobile ticketing incentives could operate either in tandem with the current day pass program, while expanding other incentives.

A9. Enforce Reduced Fare Eligibility Requirements: There are some general indicators that OCTA should consider changing its reduced fare enforcement policies. OCTA's reduced fare sales have increased in recent years, while overall ridership decreased. In addition, senior/disabled reduced fare products account for 28% of OCTA's ridership. Reduced fare ridership accounts for a smaller percentage at peer

agencies which enforce reduced fare eligibility. For example, LA Metro's senior/disabled ridership accounts for approximately 20% of total ridership. Based on a recent rider survey, Denver RTD reported that reduced fare products accounted for 14% of total ridership. The growth in reduced fare ridership and the larger share of reduced fare ridership compared to peer agencies could indicate the potential for misuse of reduced fare products.

If by enforcing eligibility requirements for reduced fares, 10% of reduced fare riders (including youth 30-day pass riders) were to pay regular fares instead, this is projected to have the following impacts:

- Ridership Change: Annual change of **-567,400 (-1.2%)**
- Fare Revenue Change: Annual change of **+\$632,700 (+1.3%)**

If by enforcing eligibility requirements for reduced fares, 20% of reduced fare riders (including youth 30-day pass riders) were to pay regular fares instead, this is projected to have the following impacts:

- Ridership Change: Annual change of **-1,134,900 (-2.4%)**
- Fare Revenue Change: Annual change of **+\$1,265,300 (+2.5%)**

If by enforcing eligibility requirements for reduced fares, 30% of reduced fare riders (including youth 30-day pass riders) were to pay regular fares instead, this is projected to have the following impacts:

- Ridership Change: Annual change of **-1,702,300 (-3.6%)**
- Fare Revenue Change: Annual change of **+\$1,898,000 (+3.8%)**

OCTA's current policy, in which reduced fare ID is not required to purchase reduced fare products, enables potential fare abuse. By controlling some of this fraud, OCTA could potentially gain 1-4% (or more) of total fare revenue. The modeling results are reflective of a range of possible levels of fraud and are not based on specific observations. Further efforts should be made to explore the prevalence of fare abuse within the system in order to determine the exact benefit of increased enforcement. Regardless of the actual extent of fare abuse, reduced fare eligibility enforcement is implemented at most peer agencies and would have positive impacts OCTA's revenue. It is recommended that OCTA further evaluate reduced fare eligibility enforcement strategies.

A10. Scale Back Free Fare Promotions: If the Mobility, promotional day pass, and marketing/promotional fare programs were to be eliminated, with 30% of the associated ridership being retained at an average fare of \$1.06 per boarding (OCTA's system wide average fare), this is projected to have the following impacts:

- Ridership Change: Annual change of **-163,300 (-0.3%)**
- Fare Revenue Change: Annual change of **+\$74,200 (+0.1%)**

This option would marginally decrease ridership, however Mobility, promotional day pass, and marketing/promotional fare riders are currently non-paying customers. While OCTA has made strides in reducing the number of free rides, these fare products account for a noticeable amount of ridership.

Scaling back these programs would allow OCTA to capture lost revenue from these fare products. It is then recommended that OCTA further evaluate methods for scaling back its free fare promotions.

A11. Streamline Interagency Agreements: OCTA separately tracks transfers from the LA Metro TAP program. Therefore, the impact to discontinuing TAP acceptance was modeled. If acceptance of the Metro TAP card on OCTA services was discontinued, with 50% of the associated ridership being retained at an average fare of \$1.06 per boarding, this is projected to have the following impacts:

- Ridership Change: Annual change of **-250,700 (-0.5%)**
- Fare Revenue Change: Annual change of **+\$265,800 (+0.5%)**

Projected ridership losses would be modest, as would additional fare revenue. It is recommended that OCTA evaluate its transfer agreements, however further analysis is required to determine which agreements have the greatest potential for fare abuse and how best streamline these agreements.

7.2 Evaluation of Medium Term Options

B1. Convert Cash Fare to a Two-Hour Pass: Converting the cash fare to a two-hour pass is projected to have the following impacts:

- Ridership Change: Annual change of **+1,627,500 (+3.5%)**
- Fare Revenue Change: Annual change of **-\$2,561,800 (-5.1%)**

This option is projected to result in a higher ridership increase, and greater fare revenue loss, than any of the other options. This alternative would allow for easier transfers for the majority of OCTA riders. This alternative is consistent with the time duration of peer agencies that offer similar fare products. It is also consistent with OCTA customer behavior. According to the 2014 Bus Service Customer Satisfaction Survey, 81% of OCTA trips are completed within two hours. While this would benefit the majority of OCTA's transferring riders, there would be a considerable revenue loss to OCTA.

There are also implementation and enforcement concerns with this option. Riders may need to have the validity time printed on the two-hour pass, so they know how long the pass will be valid for. If the two-hour passes are designed as visual validation, there is a potential for increased operator conflict to verify pass validity, increased fraud potential, and additional dwell time associated with fare media needing to be printed for cash riders. If the 2 hour product is on electronic media, new fare media would have to be produced and farebox functionality updated, with increased maintenance costs. Given the revenue loss and operational difficulties of this option, it is not recommended that OCTA convert its cash fare to a Two-Hour pass.

B2. Eliminate 30-Day C-Pass: The impacts on ridership and fare revenue by eliminating the 30-Day C-Pass are projected to be extremely minor. It is assumed that most riders would migrate to a different pass product:

- Ridership Change: Annual change of **-800 (-0.0%)**
- Fare Revenue Change: Annual change of **+\$1,300 (+0.0%)**

The 30-Day C-Pass is a relatively new fare product. Therefore, pass usage may require a ramp up period to hit full ridership. Additionally, the 30-Day C-Pass may have higher usage on the mobile ticketing app when available. It is not currently recommended that OCTA eliminate the 30-Day C-Pass.

B3. Develop Urban/Suburban Fare Structure: Based on a review of OCTA's fixed route system map, it is not straightforward to cleanly identify which routes are urban versus suburban:

- Some routes, including 25: Fullerton – Huntington Beach, 29: La Habra – Huntington Beach, and 33: Fullerton – Huntington Beach, run outside of the core central area of Anaheim, Orange, and Santa Ana. However, these routes adhere to the same grid-based design as routes operating in the core area, and have similar route lengths. It would be difficult to justify charging these routes at a higher fare on the basis of either route design or route length.
- Other routes, including 57: Brea – Newport Beach and 76: Huntington Beach – Newport Beach, follow a grid-based design for part of its route alignment and a more curved design for another part of the alignment.

One approach that is consistent and easy to understand would be to classify suburban routes as those routes that operate either partially or fully in South Orange County (defined as south of Irvine, or south of SR-133). These routes are:

- 1: Long Beach – San Clemente (739,484 estimated annual boardings in FY2015)
- 82: Foothill Ranch – Laguna Niguel (186,801 boardings)
- 83: Anaheim – Laguna Hills (817,933 boardings)
- 85: Mission Viejo – Dana Point (216,582 boardings)
- 86: Costa Mesa – Mission Viejo (184,967 boardings)
- 87: Rancho Santa Margarita – Laguna Niguel (128,032 boardings)
- 89: Mission Viejo – Laguna Beach (439,472 boardings)
- 90: Tustin – Dana Point (373,620 boardings)
- 91: Laguna Hills – San Clemente (482,335 boardings)
- 177: Foothill Ranch – Laguna Hills (114,706 boardings)
- 187: Laguna Hills – Dana Point (54,492 boardings)
- 188: Laguna Hills – Irvine (60,639 boardings)
- 191: Mission Viejo – San Clemente (167,140 boardings)
- 193: Dana Point – San Clemente (23,738 boardings)
- 206: Santa Ana – Lake Forest Express (25,268 boardings)
- 211: Seal Beach – Irvine Express (36,076 boardings)
- 212: Irvine – San Juan Capistrano Express (12,510 boardings)
- 216: San Juan Capistrano – Costa Mesa Express (5,215 boardings)
- 480: Irvine Station – Lake Forest (24,766 boardings)
- 490: Laguna Niguel/Mission Viejo – Aliso Viejo (10,298 boardings)

Collectively, these 20 suburban routes accounted for 8.8% of OCTA's total fixed route ridership in FY2015. A hypothetical fare structure was evaluated with the following prices:

- Urban Routes (Cash and Day Pass): Regular cash fare of \$1.75; senior/disabled cash fare of \$0.60. Regular day pass fare of \$4.50; senior/disabled day pass fare of \$1.20. This represents a fare reduction from existing fare levels.
- Suburban Routes (Cash and Day Pass): Regular cash fare of \$3.00; senior/disabled cash fare of \$1.25. Regular day pass fare of \$7.50; senior/disabled day pass fare of \$2.50. This represents a fare increase from existing fare levels.
- 7-Day and 30-Day Pass: No change. The 7-Day Pass, priced at \$25.00 for regular riders and \$8.25 for senior/disabled riders, would be valid for travel on both urban and suburban routes. The 30-Day Pass, priced at \$69.00 for regular riders, \$22.25 for senior/disabled riders, and \$40.00 for youth riders, would also be valid for travel on both urban and suburban routes.
- Express and OC Express Fares: No change. These routes would continue to be priced at higher fares than urban or suburban routes.

Based on the pricing structure described above, converting OCTA's existing fare structure to a service-based fare structure with urban and suburban routes would have the following impacts:

- Ridership Change: Annual change of **+1,333,400 (+2.8%)**
- Fare Revenue Change: Annual change of **-\$1,226,000 (-2.5%)**

Because the percentage of riders who use suburban routes is relatively small, it is not practical to reduce the fares on urban routes and offset the resulting fare revenue loss with a fare increase on suburban routes (i.e., because ridership on suburban routes is relatively small, the additional fare revenue obtained by charging higher suburban fares would not pay for the fare revenue loss resulting from charging lower urban fares).

This alternative would also have implications for ACCESS service. The maximum urban ACCESS fare would be \$3.50 and the maximum suburban ACCESS fare would be \$6.00 (before the M2 mandated 10% discount). Calculating the exact ACCESS impacts would require determining the number of ACCESS rides which coincide with urban and suburban routes. Assuming the same breakdown of urban/suburban ACCESS trips as for fixed route (91.2% urban/8.2% rural), a rural ACCESS fare of \$5.40 (\$6.00 discounted by 10%), and an urban ACCESS fare of \$3.10 (\$3.50 discounted by 10% and rounded down to the nearest dime) the following ACCESS implications were projected:

- Ridership Change: Annual change of +53,200 (+3.2%)
- Fare Revenue Change: Annual change of -\$364,600 (-6.2%)
- Operating Cost Change: Annual change of +\$2,204,500 (+3.2%)

Similar to the fixed route results, the ACCESS urban/suburban fare structure would increase ridership and decrease revenue. This was driven by the decrease in urban ACCESS fares. The ridership and revenue impacts are dependent on the fare pricing levels. Keeping the urban ACCESS fare at the current levels and setting the suburban ACCESS fare at \$5.40 would decrease ACCESS ridership.

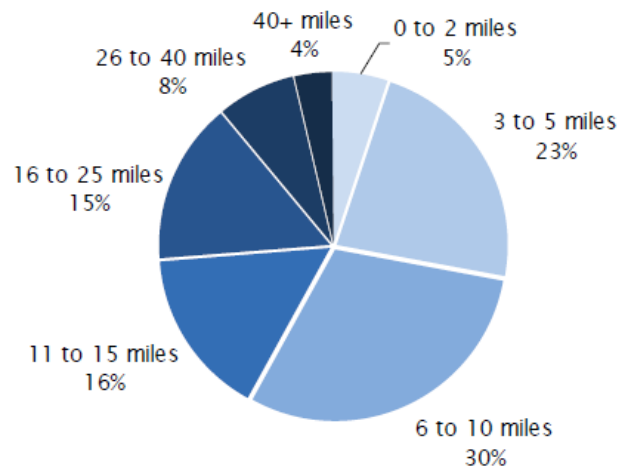
While this option would increase fixed route ridership, this structure would also increase ACCESS ridership and operating costs. This option would increase ACCESS operating costs by over +\$2,200,000 and would decrease overall annual revenue by more than -\$1,500,000. Therefore, it is not recommended that OCTA develop an urban/suburban fare structure.

B4. Develop New Specialized Fare Products: While the development of new fare specialized fare products is highly situational, there are certain products that may have more drawbacks than benefits. Some interest has been expressed in special family based passes, where a family could ride under one special fare product. However, family passes could present an enforcement/fraud concern. There is potential for fraud and operator conflict as family pass holders may attempt to board with non-family members. Drivers are then forced to determine if a group of passengers are family members. These disputes can lead to increased delays and/or increased complaints against the agency. Issuing passes to individual family members would require OCTA to define/determine eligibility for the family pass. This again can lead to increased disputes with customers. Other peer agencies, especially those with electronic fare media, seldom introduce new fare products that are difficult to enforce. TransLink, in Vancouver, BC, recently eliminated its family pass program on Sundays due to a new smartcard program. Given the enforcement and operational concerns, it is not recommended that OCTA develop new specialized fare products in the short term.

7.3 Evaluation of Long Term Options

C1. Implement Distance-Based Fares: The OCTA 2014 Customer Satisfaction Survey included information on passenger trip lengths, as shown in Exhibit 7-4:

Exhibit 7-4. Total Miles to Complete Trip, OCTA Fixed Route Riders



Source: OCTA Fixed-Route Bus Service Customer Satisfaction Survey: Summary Research Report, page 40; TrueNorth Research, December 2014

The average total trip length reported by OCTA riders via survey was 14.3 miles.

In the future, with multiple readers (both front-door and rear-door) on OCTA buses and sufficient market share of account-based technologies among OCTA riders, it may be possible for OCTA to charge

riders based on actual miles traveled. This would involve riders tagging on once when boarding the vehicle, and tagging again when exiting the vehicle. Riders would be charged the maximum one-way fare upon boarding, and receive a refund with the second tag based on the appropriate distance-based fare.

With a distance-based fare structure, it would likely make sense for OCTA to eliminate the Day Pass and the 30-Day Pass. The majority of riders would pay for every trip based on the number of miles traveled, without the need for OCTA to offer pass-based fare products. Special passes, including the College Pass, Summer Youth Pass, and inter-agency transfers, could be retained.

An example distance-based fare structure was evaluated, with the following fare structure:

- Regular Fares: \$0.50 base fare, covering the first mile of travel. For trips that are longer than one mile, a per-mile surcharge of \$0.10 per additional mile traveled would apply, capped at a maximum one-way fare of \$3.00 (for trips longer than 25 miles).
- Senior/Disabled Fares: \$0.20 base fare, covering the first mile of travel. For trips that are longer than one mile, a per-mile surcharge of \$0.05 per additional mile traveled would apply, capped at a maximum one-way fare of \$1.25 (for trips longer than 21 miles).

For pricing purposes, miles traveled are rounded up to the whole mile (i.e., a trip of 1.1 miles is rounded up to two miles, and would have a regular fare of \$0.60 or a senior/disabled fare of \$0.25).

It is assumed that on average, shorter trips would have higher fare elasticities than longer trips. With shorter trips, there is higher potential on average for the trip to be made with other modes of transportation including walking, biking, and ridesharing. The following elasticity assumptions were made: -0.60 for trips of under one mile; -0.55 for trips between one and two miles; -0.50 for trips between two and three miles; -0.48 for trips between three and four miles; -0.46 for trips between four and five miles; -0.44 for trips between five and six miles; and -0.43 for trips of more than six miles. These elasticities were adapted from elasticities used in prior distance based fare studies.

Based on the pricing structure and fare elasticity assumptions described above, converting OCTA's existing fare structure to a distance-based fare structure would have the following impacts:

- Ridership Change: Annual change of **+1,655,300 (+3.5%)**
- Fare Revenue Change: Annual change of **+\$1,976,300 (+4.0%)**

Distance-based fares would charge lower fares for shorter trips (which have higher average fare elasticities), and higher fares for longer trips (which have lower average fare elasticities). As such, the increase in ridership from short-distance riders would outweigh the decrease in ridership from long-distance riders. By segmenting the market in this manner, the FARES model projects that OCTA could increase both ridership and fare revenue through a distance-based fare structure.

However, a distance-based fare structure would also have implications on ACCESS fares (fares for shorter ACCESS fares would go down; fares for longer ACCESS trips could potentially be increased). Given the lack of competing modes for ACCESS trips, the general paratransit elasticity of -.30 was assumed for all distance segments.

An example distance-based fare structure was evaluated, with the following fare structure:

- ACCESS Fares: \$1.00 base fare, covering the first mile of travel. For trips that are longer than one mile, a-per mile surcharge of \$0.20 per additional mile traveled would apply, and would be discounted by 10% using M2 funding. The maximum one-way fare before the 10% M2 discount would be capped at \$6.00 (for trips longer than 25 miles). The M2 discounted maximum ACCESS fare would be \$5.40 for trips longer than 25 miles.

Based on the pricing structure and fare elasticity assumptions described above, converting OCTA's existing ACCESS fare structure to a distance-based fare structure would have the following impacts:

- Ridership Change: Annual change of **+218,700 (+13.2%)**
- Fare Revenue Change: Annual change of **-\$1,213,700 (-20.2%)**
- Operating Cost Change: Annual Change of **+\$9,065,800 (+13.2%)**

These results show a much greater percentage increase in ridership and a significant decrease in revenue for the ACCESS distance based fare structure compared to the local/express distance based structure. The ACCESS fare structure was directly based on the local/express distance based structure in order to comply with FTA/ADA requirements. However, the ACCESS results are heavily impacted by ACCESS ridership behavior. For ACCESS ridership, it was estimated that approximately 76% of riders would have decreased fares, while only 24% would have increased fares under this structure. Therefore the revenue decrease from discounting shorter distance trips was much greater than the increase in revenue collected from more expensive longer trips. More fine grained changes to the local/express and ACCESS distance based structures can be explored in the future to help increase ridership and revenue for both the local/express and ACCESS services.

Implementing a distance based structure would increase ridership and revenue for fixed route services. However, this distance based structure would have to be mirrored for ACCESS service. Given the travel behavior of OCTA's paratransit customers, the proposed distance based structure would decrease fares for a vast majority of ACCESS riders. This would increase ACCESS ridership, reduce ACCESS revenue, and greatly increase ACCESS operating costs. Overall, the negative ACCESS impacts outweigh the fixed route benefits from the distance based structure. It is then not recommended that OCTA implement a distance based fare structure.

C2. Consider Fare Capping, Bonuses, and Other Innovative Fare Policies:

As discussed, innovative fare policies could provide benefits to customers and OCTA in the future. However, given current revenue limitations and desire to minimize operating costs, it is recommended that drastic changes to fare policies are minimized. Large changes will have considerable impacts on operations, communications, maintenance, and customer experience. Innovative fare policies should be considered after mobile ticketing has been implemented and adoption is monitored. At that time, mobile bus validators can allow policies such as fare capping, discount pricing, location based pricing, and stored value.

However, there are some relatively simple fare policies that can be enabled through scheduled fare changes. Many of OCTA's pass products are priced at partial multiples. For example, the full fare 30-Day Express Pass is currently priced at a 31.25 times the full cash Express fare. Partial multiples can be confusing to customers when purchasing fare products. Partial pricing multiples can create difficulty when considering fare increases. Based on the current pricing multiples, increasing the adult base cash fare from \$2.00 to \$2.50 would imply that the 30-Day Pass would be priced at \$77.63. Introducing standardized pricing rules would help to make an easier to understand fare table and would facilitate consistent fare changes given price increases. It is then recommended that OCTA adopt a standardized fare pricing table.

Exhibit 7-5. Current and Proposed Fare Product Pricing Multiples

Fare Type	Full Fare Fixed Route		Full Fare Express		Full Fare OC Express	
	Current Multiple	Proposed Multiple	Current Multiple	Proposed Multiple	Current Multiple	Proposed Multiple
Single Ride	\$2.00	\$2.00	3.0x 1-Ride	3.5x 1-Ride	2.0x 1-Ride	2.0x 1-Ride
Day Pass	2.0x 1-Ride	2.0x 1-Ride	2.0x Express 1-Ride	2.0x Express 1-Ride	2.0x OC Express 1-Ride	2.0x OC Express 1-Ride
Day Pass, Pre-Paid	0.9x Day Pass	0.9x Day Pass	-	-	-	-
30-Day Pass	34.5x 1-Ride	32.0x 1-Ride	31.25x Express 1-Ride	30.0x Express 1-Ride	31.25x OC Express 1-Ride	30.0x OC Express 1-Ride
Youth 30-Day Pass	-	-	-	-	-	-

Fare Type	Reduced Fare Fixed Route		Reduced Fare Express		Reduced Fare OC Express	
	Current Multiple	Proposed Multiple	Current Multiple	Proposed Multiple	Current Multiple	Proposed Multiple
Single Ride	0.4x 1-Ride	0.4x 1-Ride	0.67x Express 1-Ride	2.0x Express 1-Ride	0.875x OC Express 1-Ride	0.5x OC Express 1-Ride
Day Pass	0.5x Day Pass	0.5x Day Pass	0.83x Express 1-Ride	0.5x Express 1-Ride	0.875x OC Express Day Pass	0.5x OC Express Day Pass
Day Pass, Pre-Paid	0.9x Senior Disabled Day Pass	0.9x Senior Disabled Day Pass	-	-	-	-
30-Day Pass	30.0x S/D 1-Ride	28.0x S/D 1-Ride	-	-	-	-
Youth 30-Day Pass	0.57x 30-Day Pass	0.5x 30-Day Pass	-	-	-	-

8. Fare Structure Recommendations

The recommended fare structure was developed based on a review of OCTA’s current structure, interviews conducted with OCTA staff, peer agency policies/structures, fare mandates, qualitative analysis, and quantitative ridership/revenue forecasts using the FARES model. Exhibit 8-1 summarizes these recommendations, consisting of fare changes in July 2016, July 2017, July 2021, and July 2025.

Exhibit 8-1. Recommended Fare Structure

Fare Type	Current	July 2016 Fare Change	July 2017 Fare Change	July 2021 Fare Change	July 2025 Fare Change	Pricing Rule
REGULAR FARES, LOCAL						
Single Ride	\$2.00	\$2.00	\$2.25	\$2.50	\$3.00	Increases every 4 years
Day Pass	\$5.00	\$4.00	\$4.50	\$5.00	\$6.00	2.0x 1-Ride
Day Pass, Pre-Paid	\$4.50	\$3.50	\$4.00	\$4.50	\$5.50	0.9x Day Pass
7-Day Pass	\$25.00	eliminate	-	-	-	eliminate in FY2016
30-Day Pass	\$69.00	\$69.00	\$72.00	\$80.00	\$96.00	32.0x 1-Ride
5 Rides Pass	\$9.00	eliminate (valid to Jun 2017)	-	-	-	eliminate in FY2016
REGULAR FARES, EXPRESS						
Single Ride, Express	\$6.00	\$7.00	\$8.00	\$8.75	\$10.50	3.5x 1-Ride
Day Pass, Express	\$12.00	\$14.00	\$16.00	\$17.50	\$21.00	2.0x Express 1-Ride
30-Day Pass, Express	\$187.50	\$210.00	\$240.00	\$262.50	\$315.00	30.0x Express 1-Ride
Single Ride, OC Express	\$4.00	\$4.00	\$4.50	\$5.00	\$6.00	2.0x 1-Ride
Day Pass, OC Express	\$8.00	\$8.00	\$9.00	\$10.00	\$12.00	2.0x OC Express 1-Ride
30-Day Pass, OC Express	\$125.00	\$120.00	\$135.00	\$150.00	\$180.00	30.0x OC Express 1-Ride
Surcharge with Local Pass, Express	\$4.00	\$5.00	\$5.75	\$6.25	\$7.50	pay express surcharge
Surcharge with Local Pass, OC Express	\$2.00	\$2.00	\$2.25	\$2.50	\$3.00	pay express surcharge
REDUCED FARES						
Single Ride, Senior/Disabled/Veteran	\$0.75	\$0.75	\$0.85	\$1.00	\$1.20	0.4x 1-Ride
on Express	\$5.00	\$3.50	\$4.00	\$4.38	\$5.25	0.5x Express 1-Ride
on OC Express	\$3.50	\$2.00	\$4.00	\$4.38	\$5.25	0.5x OC Express 1-Ride
Day Pass, Senior/Disabled/Veteran	\$1.50	\$1.50	\$1.70	\$2.00	\$2.40	2.0x S/D 1-Ride
on Express	\$10.00	\$7.00	\$7.00	\$7.00	\$7.00	0.5x Express Day Pass
on OC Express	\$7.00	\$4.00	\$4.00	\$4.00	\$4.00	0.5x OC Express Day Pass
Day Pass Pre-Paid, Senior/Disabled/Veteran	\$1.35	\$1.35	\$1.50	\$1.75	\$2.25	0.9x Senior Disabled Day Pass
7-Day Pass, Senior/Disabled	\$8.25	eliminate	-	-	-	eliminate in FY2016
30-Day Pass, Senior/Disabled/Veteran	\$22.25	\$22.25	\$24.00	\$28.00	\$34.00	28.0x S/D 1-Ride
Surcharge with Pass, Express	\$4.25	\$2.75	\$3.15	\$3.38	\$4.05	pay express surcharge
Surcharge with Pass, OC Express	\$2.75	\$1.25	\$1.40	\$1.50	\$1.80	pay express surcharge
30-Day Pass, Youth	\$40.00	\$36.00	\$36.00	\$40.00	\$48.00	0.5x 30-Day Pass
30-Day Pass, Youth Summer	\$20.00	\$20.00	\$24.00	\$28.00	\$34.00	1.0x S/D 30-Day Pass
OTHER						
Single Ride, ACCESS Eligible	\$0.25	\$0.25	\$0.25	\$0.25	\$0.30	0.1x 1-Ride
Single Ride, Personal Care Attendant	\$0.25	\$0.25	\$0.25	\$0.25	\$0.30	0.1x 1-Ride
College Pass, 30-Day	\$46.00	\$46.00	\$50.00	\$56.00	\$67.00	0.7x 30-Day Pass
College Pass, 75-Day	\$115.00	\$110.00	\$110.00	\$125.00	\$145.00	2.2x 30-Day College
College Pass, 120-Day	\$185.00	\$175.00	\$175.00	\$195.00	\$235.00	3.5x 30-Day College
University Pass	yes	retain	retain	retain	retain	adjust fares over time
Perk Pass, per ride	\$1.25	\$1.25	\$1.35	\$1.50	\$1.80	0.6x 1-Ride
Perk Pass, monthly cap	\$69.00	\$69.00	\$72.00	\$80.00	\$96.00	1.0x 30-Day Pass
Inter-Agency Fare Agreements	yes	Determine ways to simplify and negotiate reimbursement rates				
Mobile Ticketing	no	Fare promotions in short-term; fare capping in long-term				
ACCESS						
Fare, 1 to 2 Zones	\$3.60	\$3.60	\$4.05	\$4.50	\$5.40	2.0x 1-Ride with 10% discount
Fare, 3 Zones	\$3.60	\$7.20	\$8.10	\$9.00	\$10.80	4.0x 1-Ride with 10% discount

Fare Table Pricing Rules: Exhibit 8-1 above describes the proposed pricing rules. With the exception of heavily discounted and account based products (such as the Perk Pass), the final fares are rounded to the nearest quarter. These pricing rules are based on professional experience and peer agency pricing multiples. All pricing rules are ultimately dependent on changes to the base cash fare for full fare riders. Therefore, future base fare increases will automatically impact all other fare products.

Regular Fares, Local: Keeping consistent with OCTA's Comprehensive Business Plan, and to maintain farebox recovery, the recommendations include single ride fare increases to \$2.25 in 2017, \$2.50 in 2021, and \$3.00 in 2025. The 30-Day Pass would be priced at 32.0 times the single ride fare.

Reducing the Day Pass price is recommended as an easier way to increase ridership than introducing a new Two-Hour Pass. The Day Pass price would be reduced from \$5.00 to \$4.00 in July 2016, and be priced at a multiple of 2.0 times the single ride for future fare increases. This would effectively provide free transfers for riders who make two or more linked trips in a day. The price of pre-paid Day Passes would be priced at a multiple of 0.9 times the full fare Day Pass.

The 7-Day Pass would no longer be issued starting in July 2016. The 5-Ride Pass would no longer be issued starting in July 2016 (existing passes would be valid until June 2017).

Regular Fares, Express: In order to create distinct Inter County Express and Intra County Express services, the recommendations include re-categorizing existing express services into the Express service and converting all 200 numbered local routes into the OC Express service. The Express single ride is set at 3.5 times the local single ride fare starting in July 2017 and the OC Express single ride will remain at 2.0 times the local single ride fare. For both express services, the day pass is set at 2.0 times the express single ride fare and the monthly pass is set at 30.0 times the express single ride fare. The final Express fares are as follows: single ride fare is set at \$7.00, the day pass is set at \$14.00, and the monthly pass is set at \$210. The final OC Express fares are as follows: single ride fare is set \$4.00, the day pass is set at \$8.00, and the monthly pass is set at \$120. These changes also reduce the transfer surcharges from local to express routes. Exhibit 8-2 displays the current and proposed base fare pricing rules for the express services.

Exhibit 8-2 Express Service Base Fare Changes

Fare Type	Current Pricing Rule	New Pricing Rule (July 2016)
Express	3.0x 1-Ride	3.5x 1-Ride
OC Express	2.0x 1-Ride	3.5x 1-Ride
#200 Routes	1.0x 1-Ride	2.0x 1-Ride

Reduced Fares: Existing reduced fare discounts for senior/disabled riders would be retained for local services. In order to stay consistent with current reduced fare discounts. The senior/disabled discounts on express services would be increased to 50% (half-fare) starting in July 2017. The senior/disabled prepaid Day Pass would remain at a multiple of 0.9 time the senior/disabled Day Pass.

The youth discount would continue to be offered only on the 30-Day Pass, not on the single-ride fare or the Day Pass. In order to increase ridership, the youth 30-Day Pass would be discounted from \$40.00 to \$36.00 in July 2016. The youth 30-Day Pass would then be priced at a 50% discount from the regular 30-Day Pass starting in July 2017.

Discounted fares would be offered to veterans. The veteran discount would be equivalent to the senior/disabled discount. The veteran discount would be offered on all passes in which there is a discounted senior/disabled fare product.

Enforcement of reduced fare eligibility should be increased. There is currently no enforcement of reduced fare eligibility at the point of sale. Most peer agencies have some form of enforcement. While it is difficult to estimate the true benefit, the 10% to 30% fraud modeling assumptions illustrated that OCTA could see a noticeable increase in revenue from reduced fraud.

Other Fares: In order to encourage ridership, fares for the College 75-Day and 120-Day passes would be reduced starting in July 2016, to \$110.00 and \$175.00 respectively. The College 30-Day Pass would be retained at its current fare level. Starting in July 2017, the College 30-Day Pass would be priced at 0.7 times the regular 30-Day Pass price, the College 75-Day Pass would be priced at 2.2 times the College 30-Day Pass and the College 120-Day Pass would be priced at 3.5 times the College 30-Day Pass.

U-Pass and Perk Pass pricing would increase over time, in proportion to changes in regular 30-Day Pass prices.

ACCESS: Given OCTA's large service area and growing paratransit costs, it is recommended that ACCESS service move to a zone-based system. Under this system, fares will be charges based on the number of zones crossed. The fare structure will distinguish between shorter trips crossing 1-2 zones and longer trips crossing 3 zones. The fare for 1-2 zone trips would stay as is, which is 10% less than 2.0 times the local single ride fare. The fare for 3 zone trips would be set at \$7.20 starting in July 2016, or 10% less than 4.0 times the current local single ride fare (since 3 zone trips would require two or more fixed route buses in order to complete the trip).

Mobile Ticketing: The adoption of mobile ticketing offers new opportunities for OCTA and its riders. Adoption trends for new technologies are agency-specific and are driven by a variety of factors. Fare policy is a factor that could have significant impacts on adoption rate, in addition to marketing, service types, customer demographics, and app user experience. With OCTA's mobile ticketing project currently in progress, it is important to track early usage and track and observed trends in order to maximize adoption. While the correlation between new technologies and ridership/revenue are difficult to quantify, some agencies who have launched mobile ticketing have reported interesting trends:

- Reduced usage of other sales channels: By comparing sales data for other sales channels before and after the introduction of mobile ticketing, OCTA could track which channels are being replaced with mobile ticketing. For example, if the amount of farebox cash revenue reduces while mobile ticketing revenue increases, that indicates that former cash riders are migrating to mobile ticketing. Since cash collection has a high collection, maintenance, and dwell time costs, that could be a positive trend.
- High adoption by a dedicated group: If the mobile ticketing experience is properly marketed and implemented, technology-savvy riders tend to prefer it over other forms of fare media. Therefore, they can become repeat-users and the percentage of new users reduces over time. As discussed, OCTA can implement policy incentives for new users, to help drive increased ridership.

Since mobile ticketing is a relatively new form of fare payment, there are not many examples to correlate mobile adoption to ridership or revenue. Generally speaking, agencies who have adopted

mobile ticketing have not attributed noticeable impacts on ridership or revenue to mobile ticketing. As discussed, impacts of new technologies are very agency-specific. Furthermore, ridership is influenced by many factors including service levels, on time performance, bus conditions, gas prices, and the economy. If OCTA does manage to attract a new subset of users, they will likely be attracted through a combination of service changes, convenient stop locations, increased frequency, positive marketing, and favorable economic conditions.

Mobile Ticketing Minimum Purchase Amounts: Most mobile ticketing applications enforce a minimum purchase amount for fares or products. The minimum is generally intended to limit the percentage of card transaction fees that come with credit/debit card payments. The specific fixed and variable fee amounts vary with card association (VISA, MasterCard, American Express, Discover, etc.) and issuing bank. This fee can be a large percentage for smaller purchase amounts, or micropayments, that are associated with most agency base fares.

Therefore, many agencies enforce a minimum purchase amount with credit/debit card payments. Portland Tri-Met and Los Angeles DOT both have a \$5.00 minimum purchase amount for their transit mobile ticketing programs. The specific minimum is usually determined by the payment processor utilized. Some processors offer favorable rates for micropayments by limited liability (associated with chargebacks and fraud), or utilizing payment aggregation to “lump” micropayments together to minimize fees. OCTA will need to work with the mobile ticketing vendor and payment processor to determine the optimal minimum purchase amount for their environment.

Mobile Ticketing Innovations: with the inclusion of bus validators, mobile ticketing can provide a variety of innovative fare policies and products in the future. Initially, it is recommended that the mobile ticketing product replicate the existing fare structure, where applicable. However, electronic validation will enable location based fare products, stored value, service-based fares, and potentially distance-based fares. In addition, equitable fare policies like fare capping could be implemented. In fare capping, customers are charged the base fare amount until a pre-determined cap is reached during a given period. Customers can receive the discount associated with prepaid passes without paying the upfront pass costs. This is very equitable and easy to understand, and contributes to fare simplicity.

Fare Alternatives for Further Evaluation: There are a series of alternatives that have merit, but warrant further evaluation. It is recommended that OCTA increase enforcement of reduced fare eligibility, to potentially mitigate a large source of misuse. It is also recommended that OCTA work to streamline interagency transfer agreements. Limiting the types of accepted transfer fare media (such as TAP) and limiting transfer points can help to reduce the potential for fare abuse. Additionally, it is recommended that OCTA scale back free fare promotions in order to recover lost fare revenue. There are complex policy and operations considerations for each of these options. OCTA should further evaluate these options and develop specific policies which best meet organizational goals and objectives.

Model Results: Exhibit 8-3 (FY2016 to FY2020) and Exhibit 8-4 (FY2021 to FY2025) provide ridership and fare revenue results for the recommended fare structure for OCTA’s fixed route services, in comparison to the baseline (no fare change). The final recommended structure was modeled by fiscal year. Therefore, the fare changes made in July 2016 are reflected in the output for FY2017. The revenue loss

associated with the recommended alternative in FY2017 could be subsidized by using available cap and trade funds. Exhibit 8-5 (FY2016 to FY2020) and Exhibit 8-6 (FY2021 to FY2025) provide ridership and fare revenue results for the recommended fare structure for OCTA's paratransit services, in comparison to the baseline (no fare change).

Exhibit 8-3. FARES Model Results, Fixed Route Recommended Fare Structure, FY2016 to FY2020

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Baseline: No Fare Change					
Ridership (# of Trips)	47,069,000	47,069,000	47,069,000	47,069,000	47,069,000
Annual Change, #		0	0	0	0
Annual Change, %		0.0%	0.0%	0.0%	0.0%
Fare Revenue	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000
Annual Change, #		\$0	\$0	\$0	\$0
Annual Change, %		0.0%	0.0%	0.0%	0.0%
Fare Box Recovery	23.0%	21.8%	21.3%	21.0%	20.1%
Average Fare Per Trip	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06
Recommended Fares					
Ridership (# of Trips)	47,069,000	48,677,300	46,910,900	46,910,900	46,910,900
Annual Change, #		1,608,300	-1,766,400	0	0
Annual Change, %		3.4%	-3.6%	0.0%	0.0%
Fare Revenue	\$49,805,000	\$47,202,500	\$49,725,800	\$49,725,800	\$49,725,800
Annual Change, #		-2,602,500	2,523,300	0	0
Annual Change, %		-5.2%	5.3%	0.0%	0.0%
Fare Box Recovery	23.0%	21.3%	21.6%	21.4%	20.5%
Average Fare Per Trip	\$1.06	\$0.97	\$1.06	\$1.06	\$1.06

Exhibit 8-4. FARES Model Results, Fixed Route Recommended Fare Structure, FY2021 to FY2026

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Baseline: No Fare Change						
Ridership (# of Trips)	47,069,000	47,069,000	47,069,000	47,069,000	47,069,000	47,069,000
Annual Change, #	0	0	0	0	0	0
Annual Change, %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fare Revenue	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000
Annual Change, #	0	\$0	\$0	\$0	\$0	\$0
Annual Change, %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fare Box Recovery	19.5%	18.9%	18.2%	17.6%	17.1%	16.5%
Average Fare Per Trip	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06
Recommended Fares						
Ridership (# of Trips)	46,796,100	44,481,400	44,481,400	44,481,400	44,481,400	41,195,700
Annual Change, #	0	-2,314,700	0	0	0	-3,285,700
Annual Change, %	0.0%	-4.9%	0.0%	0.0%	0.0%	-7.4%
Fare Revenue	\$50,726,900	\$53,982,000	\$53,982,000	\$53,982,000	\$53,982,000	\$59,801,300
Annual Change, #	0	3,255,100	0	0	0	5,819,300
Annual Change, %	0.0%	6.4%	0.0%	0.0%	0.0%	10.8%
Fare Box Recovery	19.8%	20.4%	19.8%	19.1%	18.5%	17.9%
Average Fare Per Trip	\$1.08	\$1.21	\$1.21	\$1.21	\$1.21	\$1.45

Exhibit 8-5. FARES Model Results, Paratransit Recommended Fare Structure, FY2016 to FY2020

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Baseline: No Fare Change					
Ridership (# of Trips)	1,654,100	1,654,100	1,654,100	1,654,100	1,654,100
Annual Change, #		0	0	0	0
Annual Change, %		0.0%	0.0%	0.0%	0.0%
Fare Revenue	\$5,853,000	\$5,853,000	\$5,853,000	\$5,853,000	\$5,853,000
Annual Change, #		\$0	\$0	\$0	\$0
Annual Change, %		0.0%	0.0%	0.0%	0.0%
Fare Box Recovery	11.4%	11.3%	10.9%	10.4%	9.8%
Average Fare Per Trip	\$3.54	\$3.54	\$3.54	\$3.54	\$3.54
Recommended Fares					
Ridership (# of Trips)	1654100	1645100	1,588,000	1,588,000	1,588,000
Annual Change, #		-9,000	-57,100	0	0
Annual Change, %		-0.5%	-3.5%	0.0%	0.0%
Fare Revenue	\$5,853,000	\$5,964,800	\$6,477,600	\$6,477,600	\$6,477,600
Annual Change, #		111,800	512,800	0	0
Annual Change, %		1.9%	8.6%	0.0%	0.0%
Fare Box Recovery	11.4%	11.3%	11.8%	11.3%	10.7%
Average Fare Per Trip	\$3.54	\$3.63	\$4.08	\$4.08	\$4.08

Exhibit 8-6. FARES Model Results, Paratransit Recommended Fare Structure, FY2021 to FY2026

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026
Baseline: No Fare Change						
Ridership (# of Trips)	47,069,000	47,069,000	47,069,000	47,069,000	47,069,000	47,069,000
Annual Change, #	0	0	0	0	0	0
Annual Change, %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fare Revenue	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000	\$49,805,000
Annual Change, #	0	\$0	\$0	\$0	\$0	\$0
Annual Change, %	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Fare Box Recovery	19.5%	18.9%	18.2%	17.6%	17.1%	16.5%
Average Fare Per Trip	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06	\$1.06
Recommended Fares						
Ridership (# of Trips)	47,256,768	44,949,541	44,949,541	44,949,541	44,949,541	41,666,274
Annual Change, #	0	-2,307,227	0	0	0	-3,283,267
Annual Change, %	0.0%	-4.9%	0.0%	0.0%	0.0%	-7.3%
Fare Revenue	\$49,725,818	\$52,929,536	\$52,929,536	\$52,929,536	\$52,929,536	\$58,652,130
Annual Change, #	0	3,203,718	0	0	0	5,722,594
Annual Change, %	0.0%	6.4%	0.0%	0.0%	0.0%	10.8%
Fare Box Recovery	19.8%	20.4%	19.8%	19.1%	18.5%	19.8%
Average Fare Per Trip	\$1.05	\$1.18	\$1.18	\$1.18	\$1.18	\$1.41