WETA Harbor Bay and Richmond Ferry Terminal Parking Program Implementation

Executive Summary

To facilitate implementation of previous parking studies which have recommended parking management at WETA Ferry Terminals, this report examines existing conditions at the Harbor Bay Ferry Terminal and the future Richmond Ferry Terminal and provides detailed recommendations for implementing a new parking management program, including parking pricing. Previous surveys and parking studies Harbor Bay found that the lot fills early in the morning, leaving little capacity for drivers arriving for later ferries, but even after the lot fills, passengers continue to arrive by alternative modes. These conditions are ideal for pricing and managing parking, as there is high parking demand relative to the supply and alternative modes are available. The Richmond Ferry terminal is planned to have a larger number of parking spaces for a similar number of riders, but as a new terminal, presents an opportunity to pilot parking demand management strategies early on, before riders are accustomed to free, unregulated parking.

A full menu of parking management strategy options is considered, including daily fees, monthly permits, reserved spaces, time restrictions, and discounts for carpoolers. These options are compared based on how well they meet the goals of implementing pricing: encourage the use of non-drive alone modes, create more parking availability later in the morning, and generate revenues to cover program costs and fund other improvements. In addition to the management strategies, a daily parking rate of $2.50 per day is recommended as an initial fee, on the lower end compared to fees charged at other transit stations.

The equity implications of adding parking prices are also considered. The service area of the Harbor Bay terminal does not include a large proportion of low-income households, and thus the price increase is unlikely to affect low-income riders disproportionately. The Richmond Ferry Terminal will be a new service, and implementing paid parking when service begins will not be a fee increase. Richmond has a higher concentration of low-income and minority residents, but the new ferry terminal is expected to increase the mobility options available to these groups and no adverse impacts are expected.

Several pricing technology options are also considered and compared, with a focus on multi-space meters and mobile payment as the preferred technologies. An estimate of costs and revenues show the program may raise enough revenue to cover expenses, but will probably not produce a surplus.

Finally, options for encouraging and accommodating ridesharing, bikesharing, and other transportation network companies (TNCs). This could include subsidies or discounts for TNC rides to and from the terminal, reserved parking spaces for carpools and shared vehicles, and partnerships with companies providing shared ride services.

Introduction

Previous studies conducted by WETA have recommended implementation of a parking fee to encourage more efficient use of the parking facilities and to encourage riders not to drive alone to the ferry. The purpose of this project is to develop a plan for implementing a parking pricing programs at the Harbor Bay and Richmond Ferry Terminals. These programs would include pricing, technology, and other management strategies including partnerships with emerging mobility technologies. The proposed program will operate as a pilot at these two terminals and is intended to be replicable at other WETA ferry terminal parking facilities in the future.

Background

This plan was initiated as the Harbor Bay Ferry Terminal Parking Program Implementation Study, to develop an implementation plan for parking pricing at the Harbor Bay Ferry Terminal (shown on a map in **Figure 1**) as recommended in the 2012 Harbor Bay Parking Utilization Study. The high occupancy and early fill time of the parking facility at this terminal makes it a good candidate for testing a new parking pricing program. The Richmond Ferry Terminal (shown on a map in **Figure 2**), which is currently under construction and expected to begin service in late 2018, was added as a second site for the study. As this will be a new ferry terminal, implementing a parking pricing program when the terminal opens for service would be less disruptive to ferry patrons than waiting until the terminal has been in operation for a while to switch from free parking to paid parking.

Figure 1: WETA Harbor Bay Ferry Terminal

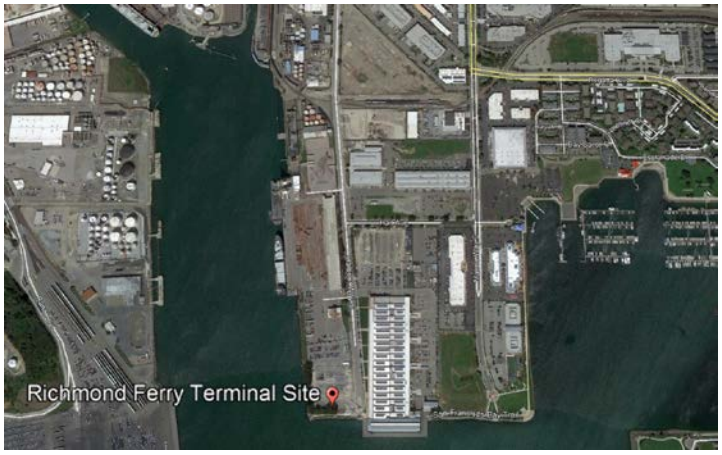


Figure 2: WETA Richmond Ferry Terminal

Relevant Studies and Documents

The following are the relevant documents related to parking at the Harbor Bay Ferry Terminal:

Harbor Bay Parking Utilization Study – 2012

The last comprehensive evaluation of the parking facilities and operations at the Harbor Bay Ferry Terminal was the 2012 *Parking Utilization Study and Improvement Strategy* prepared by Nelson\Nygaard. At that time the ferry terminal parking lot was not quite filling to capacity each day (94% peak occupancy after the morning commute) and there was still some available on-street parking. The study developed near-term recommendations to add capacity in the parking lot by striping additional spaces. It also proposed the creation of additional on-street parking by

removing existing two-hour parking restrictions and increasing the curb area available for parking. There was no discussion of paid parking at the ferry terminal, except to note that paid reserved parking would be a convenience to those who would desire to use the ferry later in the morning. It was noted that the Bay Conservation Development Commission (BCDC) has jurisdiction over the areas devoted to ferry terminal parking, both on-street and off-street, and that BCDC would not support expansion of ferry related parking if it conflicted with recreational access to the bay shore. Based on a WETA on-board survey conducted in 2011, the mode of access split for the ferry terminal was:

- 27% of passengers arrive by non-auto modes (18% percent walk, 7% bicycle, and 2% transit)
- 68% of passengers arrive by auto modes (61% drive alone and 7% by carpool)
- 3% of surveyed passengers did not indicate their access mode, and 1% indicated "other"

Easement Agreement between Harbor Bay Isle Associates and the City of Alameda – 1991

This agreement gives the City of Alameda an easement for the development of a ferry terminal parking lot of "with a capacity of approximately 250 spaces, subject to the right of the Terminal operator to charge a reasonable parking fee." The easement is also for on-shore staging facilities related to the ferry operations. The parking is to be strictly used for ferry service parking and the agreement stipulates that no overnight parking is to be allowed.

Transfer Agreement between WETA and the City of Alameda – 2004

The agreement transfers most of the provisions of the Easement Agreement, from the City of Alameda to WETA. It stipulates that the City will "maintain, resurface and reconstruct from time-to-time, as necessary, all facilities associated with the Landside Assets, subject to WETA approval of such project(s) and payment of the costs thereof." There is no mention in the parking portion of this agreement regarding the collection of parking fees or the provision of parking enforcement.

The following are the relevant documents related to parking at the Richmond Ferry Terminal:

Lease Agreement between the Successor Agency to the Former Richmond Community Redevelopment Agency and WETA - 2016

This agreement allows WETA to develop a ferry terminal, parking lot, and other access improvements on land controlled by the City of Richmond. The parking area leased for the terminal use will not be exclusive to the ferry terminal, as the agreement states that access must be allowed for other tenants of the property and designates parking spaces to be reserved for public shoreline access. WETA is allowed to make improvements to the parking facility as shown in the approved plan, including signage and numbering for enforcement. The lease does not mention or put any restrictions on WETA's ability to charge for parking, with the exception of spaces reserved for public shoreline access. The agreement states that the landlord is not

responsible for parking enforcement, and that the tenant is responsible for maintenance and operations.

Project Goals and Assumptions

The following project goals and supporting strategies are proposed to guide the development of the parking program at the WETA ferry terminals:

- **Increase Ridership** – The parking management plan should be developed to support access to the ferry terminal in a manner that encourages ridership growth.
- **Balance Ferry Loading and Improve Parking Availability**– Pricing could spread out the arrival of patrons who are driving and parking so that parking supply is available throughout the AM commute period, which may also better balance the passenger loads on each ferry run.
- **Encourage Non-Drive Alone Modes** – Given that the number of parking spaces available is constrained, an effective means of increasing the utility of the parking supply is to provide incentives to use other modes to access the station, including carpooling, kiss-and-ride, bicycling, and walking. Carpooling in particular can be encouraged through reserved or discounted parking programs.
- **Engage the TNCs** – The Transportation Network Companies (TNCs) offer an alternative to driving to the ferry terminal. Some transit operators have entered into agreements with the TNC's to provide a discount to transit riders who use TNC service to access the transit station or stop. Carpooling programs such as SCOOP, Waze Carpool, and others should also be encouraged.
- **Improve Security and Safety** – Explore measures that would increase the security of ferry rides and their vehicles while using the ferry terminal.
- **Implement Parking Pricing** – Parking pricing at the ferry terminal is a way to accomplish many of the above goals. Pricing can:
  - Encourage use of non-drive alone travel modes for those patrons who have other transportation options available to them;
  - Create more available parking late in the day to spread out the arrival of ferry riders; and
  - Generate revenues which can be used to operate the ferry terminal parking program, provide security and enforcement, and help to fund other non-drive alone access measures.
- **Provide a Model for Other Terminals** – Develop a program that can be replicated at other ferry terminal parking facilities.

In addition to these goals, the following assumptions are made about parking at the ferry terminals which guide and limit the development of parking strategies:

1. It is not practical to consider expansion of the parking at the ferry terminals due to land constraints, BCDC jurisdictional controls, and concerns of the nearby residents and businesses.

2. In order for ferry ridership to grow, the use of alternatives to the drive-alone auto will be necessary. At the Harbor Bay Ferry Terminal recent events have effectively reduced the amount of available parking, and despite this ferry ridership has increased, indicating that the alternatives to drive-alone access are acceptable to a number of users.

3. The agreements which allow WETA to operate the ferry terminal parking at the Harbor Bay Ferry Terminal appear to allow for paid parking as an option.

Existing Conditions

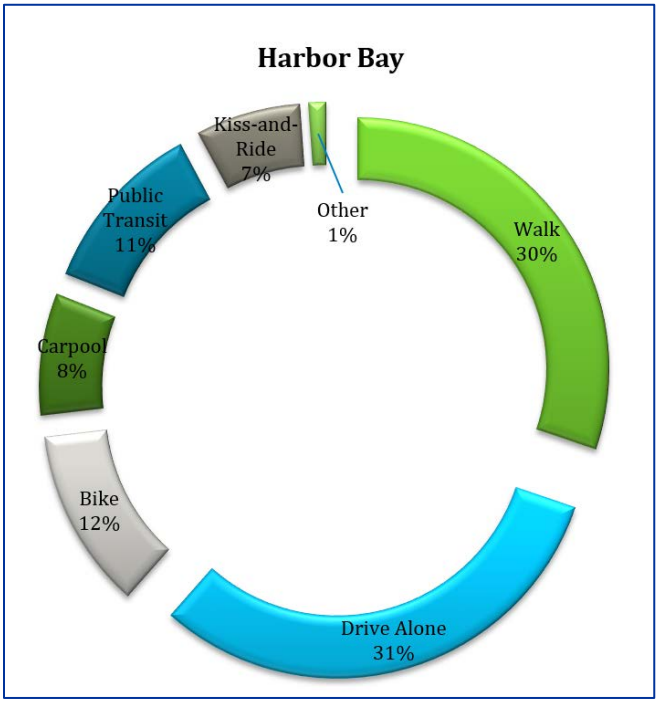
Harbor Bay

The parking situation at the Harbor Bay Ferry Terminal has changed considerably since the 2012 Parking Utilization Study was completed:

- **Ferry Ridership has increased** – In 2012 there were nearly 350 departing passengers in the morning, that number has increased to 610 departing passengers. This is a large increase in ridership that has occurred even as the parking lot has remained full, indicating an increase in use of other access modes.

- **Mode of Access** – As shown in **Figure 5**, the drive-alone percentage in 2017 was 31% and there were 7% carpools. Including the 7% kiss-and-ride results in a 45% total arriving by auto, as compared to 68% in 2012. Walking, transit and biking access has increased significantly since 2012. The ferry terminal parking lot fills quickly in the morning and is typically full by the time the 7:30 AM ferry departs. Thus, no parking is available for riders of the 8:00 AM ferry.

Figure 3: Mode of Access Distribution



- **Parking Supply** – The ferry terminal parking lot has 202 standard spaces, 31 compact spaces, and six disabled spaces. There is no parking specifically designated for carpools or motorcycles. Parking is restricted to use by ferry patrons, and all parking is currently free. The parking facility generally fills early in the morning, and therefore, patrons who drive are likely to arrive earlier than they would normally arrive in order to secure parking.

This also may result in lower use of the later ferries, and heavier loads on the early ferries (although recent experience with the revised ferry schedule due to vessel repairs, shows higher usage on the later ferries).

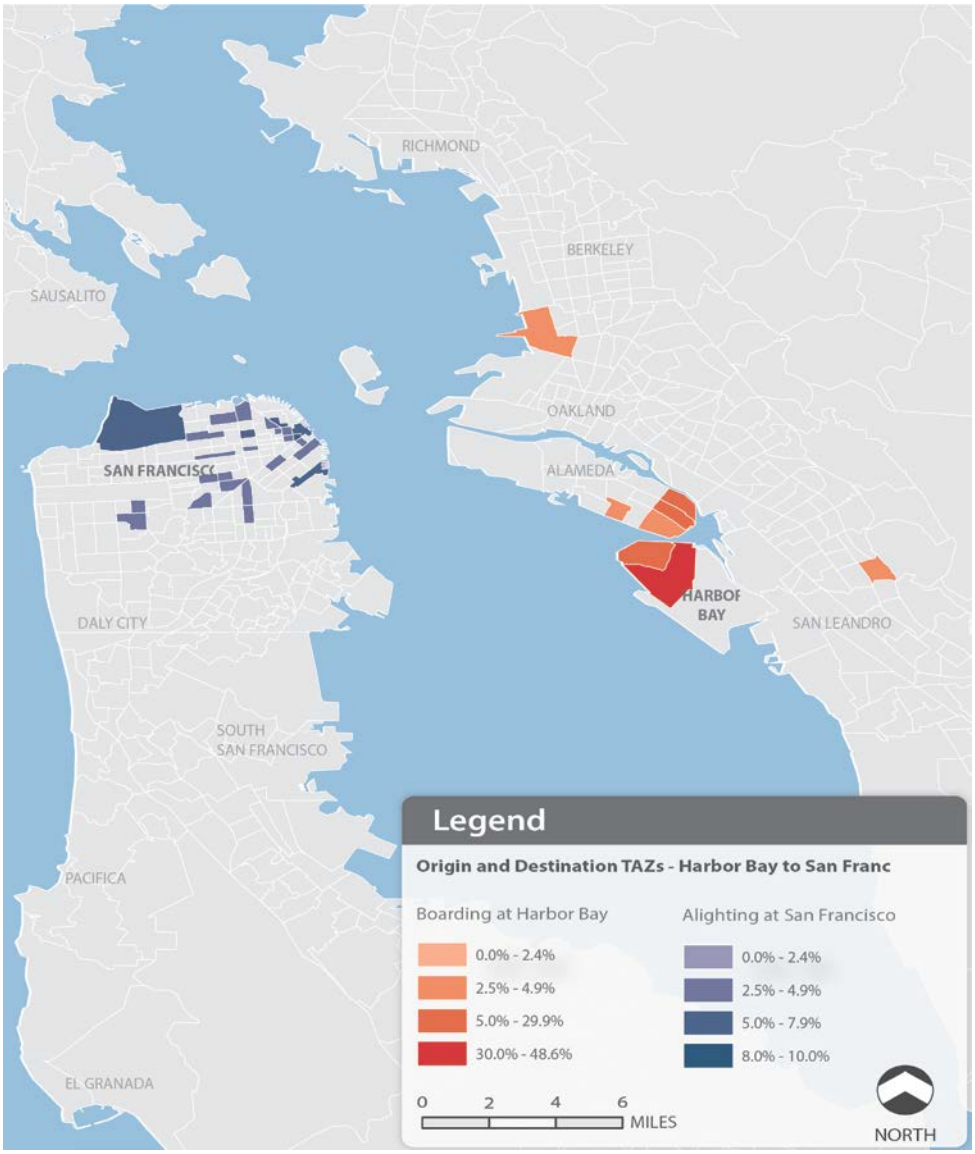
- **Residential Permit Parking (RPP)** – Residents lobbied the City of Alameda to have an RPP program implemented on the public residential streets in the residential community adjacent to the ferry terminal. Also, the nearby residential community with private streets has opted to implement its own RPP program. These areas, which once offered unrestricted on-street parking, are no longer available to ferry patrons. As a result, the effective parking supply available for ferry users has declined since 2012.
    - The City of Alameda submitted an application to the Bay Conservation and Development Commission (BCDC) to request parking permits along Harbor Bay Parkway and Adelphia Way near the Harbor Bay Ferry Terminal in May 2018. WETA wrote a letter of support for the application. The outcome of the application has yet to be decided by BCDC.
- **Transit and Shuttles** – Existing transit service at the station includes the AC Transit route 21, which runs from the Dimond District and Fruitvale BART through Alameda on Park Street to Oakland Airport, with three morning trips and five evening trips making a stop at the Harbor Bay Ferry Terminal. This route is infrequent but is timed to meet the ferry and is free for ferry riders. Additionally, the Harbor Bay Business Park operates a free Shuttle along Harbor Bay Parkway through the business park and to Coliseum BART.

Richmond

The Richmond Ferry Terminal is expected to open for service in late 2018. This section describes the characteristics of the terminal upon opening and the projected ridership.

- **Planned Ferry Service** – The ferry from Richmond will operate on weekdays only, with 4 morning trips from Richmond to San Francisco between 6 AM and 8:30 PM and 4 evening trips from San Francisco to Richmond between 4:30 PM and 7 PM. The trip is expected to take approximately 40 minutes one-way.
- **Ridership Projections** – The year 2018 projection is 487 boardings per day, 244 riders each way. Ridership is projected to grow approximately 7.1% per year.
- **Parking** – 319 parking spaces will be available for ferry patrons in an off-street facility leased from the City of Richmond.
- **Transit** – AC Transit Route 74 will run approximately every 30 minutes from the Richmond BART station to the ferry terminal
- Equity Considerations
- Implementing parking pricing has the potential to affect low income or minority communities that use the ferry service to commute. For populations that rely on a vehicle in order to be able to access the ferry, a price increase is effectively a fare increase. Whether

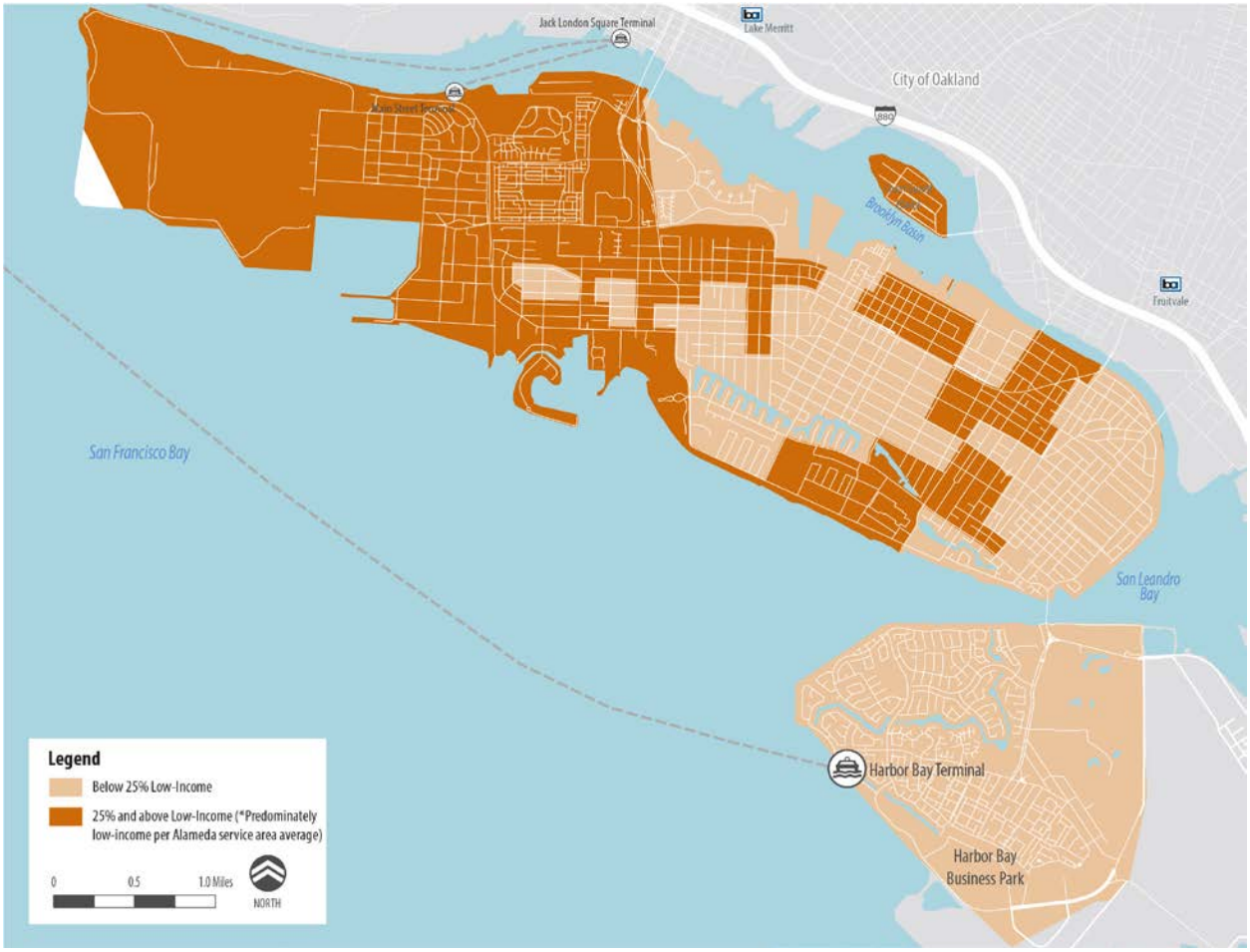
or not the proposed parking fees would disproportionately impact low-income or minority riders is considered in this section.

- Harbor Bay
- Figure 2 shows the current geographical origins and destinations of the current Harbor Bay ferry passengers. The figure shows the percentage of the total ferry passengers that depart from each origin zone in the East Bay. Nearly a third of the patrons come from Harbor Bay Island itself, and a large portion of the remaining patrons come from the eastern portion of Alameda island. This accounts for more than 90% of all the patrons. San Francisco is the final destination for nearly all these trips.
- Figure 2- Trip Origins and Destinations - Harbor Bay Ferry
- 

- Source – 2017 WETA Passenger Survey

- To determine the potential impact on low-income populations, income information for block groups in Alameda from the 2014 US Census information by Block Group is mapped in **Figure 3**. Low-income classification was defined using the accepted Metropolitan Transportation Commission method defining low-income populations as those at or below 200 percent of the poverty line. Block Groups with higher than average low-income populations (greater than the citywide 25 percent average) are highlighted to show where individuals and families are likely to be the most impacted by paid parking fees.

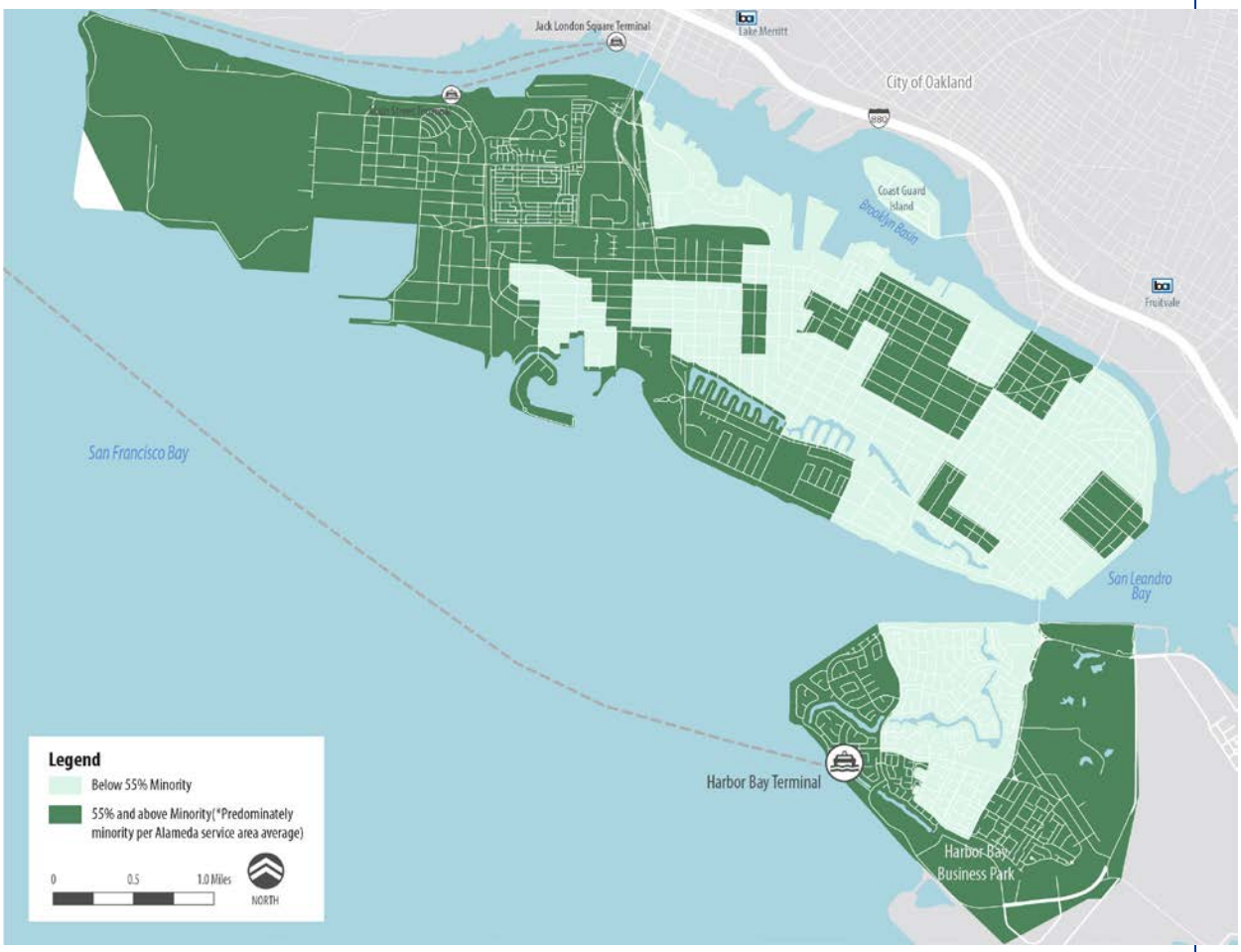
- Figure 3- Block Groups with Higher Than 25% Low Income



- Source – MTC - 2014

- All the blocks in Harbor Bay Island had under 25% low income households, meaning that this area is less low income than the city on average. On Alameda Island there are a number of blocks exceeding 25% low-income households and the concentration of these blocks increases in moving from east to west across the island. In general, the areas where most of the Harbor Bay ferry riders originate tend to be areas with lower percentages of low-income population. The west portion of Alameda is closer to the Main Street Ferry Terminal as is most of Oakland, which explains why very few Harbor Bay ferry riders originate from those areas.

- To determine the potential impact on minority populations, 2014 US Census information by Block Group is mapped in **Figure 4**. Block Groups with higher than average minority population (greater than the citywide 55 percent average) are highlighted and considered more sensitive to potential impacts. The blocks with higher than average minority population include areas of Harbor Bay Island and the eastern portion of Alameda Island, although West Alameda has the highest concentration of the above average minority percentage blocks.
- Figure 4- Block Groups with Higher than Average Percent Minority- Source – MTC -2014



- While the areas where most ferry riders originate who use the Harbor Bay Ferry (Harbor Bay Island and eastern Alameda Island) are diverse in terms of racial profile, they are not areas characterized by significant concentrations of low-income households. Thus, concerns about equity should not be a significant consideration as to whether to implement parking pricing at the Harbor Bay Ferry Terminal. The Federal Title VI guidelines which define how equity considerations should be analyzed look for a significant disparity between how a fee increase would impact the protected minority and low-income populations as compared to the service area population as a whole. In this case it does not

appear that such a disparity would exist, in fact in terms of income, a reverse disparity probably exists as the impact of a parking fee falls more on the population as a whole than it does on the low-income population of the City of Alameda.

- Richmond
- The equity considerations at the Richmond Ferry Terminal are very similar to those of the Harbor Bay Terminal with the exception that since the Richmond Ferry Terminal is new, parking pricing if implemented at the time when the ferry terminal opens will not represent a change from free to paid parking, which is the case at the Harbor Bay Ferry Terminal. There is a high concentration of low-income and high minority population census blocks within the likely catchment area of the terminal, although the areas nearest to the terminal tend to be more medium to high income with lower concentrations of minorities. The new terminal and ferry service will expand the mobility options available to these populations groups and no adverse impacts are expected.

Parking Management Strategy Development

This section describes the possible strategies, pricing, and technology for managing parking at WETA ferry terminals. It also examines the enforcement requirements, capital purchases and costs, need for contracts with outside parking service vendors, and scalability of this program to other WETA operated ferry terminal parking areas. Based on a comparison of the management alternatives and a cost-revenue analysis, recommendation for management strategies, technologies, and initial pricing are made.

Management Alternatives

This section summarizes the results of an evaluation which examines pricing as an access management tool at the Harbor Bay and Richmond ferry terminals

As recommended in the 2012 parking utilization study, WETA is planning to implement pricing at the Harbor Bay Terminal parking lot. A daily parking fee will be implemented, and other payment options will be considered such as monthly or reserved parking. The parking management goals of implementing parking pricing are:

1. Encourage use of non-drive alone modes
2. Create more parking availability late in the day
3. Generate revenues to cover parking program costs and fund other improvements

Table 1 below describes the pricing options being considered. The first option is a daily flat fee for all parkers at the terminal. The remaining options include this daily flat fee, each with an additional management option involving use of permits or reserved parking. Although these are presented as separate options to show the costs and benefits of each, multiple options could be combined in implementation.

Table 1: Pricing Options

Pricing Option	Goals Met	Costs and Implementation
Daily Fee Only *Flat daily fee for all parkers*	1. Pricing will encourage use of non-drive alone modes. 2. May create more parking availability overall, but not specifically later in the day 3. Will generate revenue	Simplest to implement. Cost includes pay station/metering equipment and installation, and/or fees for web or app-based payment method, and enforcement. On-board payment also an option.
Daily Fee plus Monthly Permits *Flat daily fee plus a monthly permit option*	1. Pricing will encourage the use of non-drive alone modes, but a discount for monthly permits may reduce this effect. 2. May create more parking availability overall, but not specifically later in the day 3. Will generate revenue, but slightly less due to monthly discount	Requires a permit management system, would need to be online or via an app, plus enforcement. Cost includes fee for permit management system as well as pay station/meter equipment (or other method) and enforcement. On-board payment also an option.
Daily Fee plus Reserved Spaces *Flat daily fee plus spaces that can be reserved ahead of time online, which would be released from reservation after the second ferry*	1. Pricing will encourage use of non-drive alone modes 2. Will create some additional availability later in the day as reserved but unused spaces are released from reservation 3. Will generate revenue, and could generate more revenue if reserved spaces have a higher price	Most complex to implement and hardest to understand by users. Will need a reservation system online or via app, clear signage and communication about program and restrictions, early enforcement to ensure reserved spaces are only used by authorized drivers before second ferry departs. Costs include fees for reservation system, signage, costs of pay station/meters or other payment method, and enforcement. This option would have additional enforcement costs. On-board payment also an option.
Daily Fee plus Time Restricted Spaces *Flat daily fee, plus spaces that would not be available for use before the second ferry departs.*	1. Pricing will encourage use of non-drive alone modes 2. Will create a guaranteed supply of parking available later in the day 3. Will generate revenue	Implement with signage and education indicating rules for restricted spaces. Requires early enforcement to ensure restricted spaces are not used before second ferry departs. Costs include signage, pay station/meters or other payment method, and enforcement. This option would have additional enforcement costs. On-board payment also an option.
Daily Fee plus Reserved or Discounted Carpool Spaces *Flat daily fee, plus spaces that could be reserved ahead of time and/or offered at a discounted rate for Carpoolers.*	1. Pricing will encourage use of non-drive alone modes. Carpool spaces will support this goal. 2. May create more parking availability overall, but not specifically later in the day 3. Will generate revenue, but slightly less due to carpool discount	More complex to implement. Requires a carpool reservation system online or partnering with a Carpool matching app like Scoop. May require additional enforcement to verify carpools, but this can also be done via an app. Costs include signage, fees for permit service or app, meters or other payment method, and enforcement. On-board payment also an option.

Pricing Alternatives

A daily parking fee is recommended under all potential parking pricing options. A reasonable fee should be set that is comparable to other transit station parking facilities and affordable to occasional drivers, but encourages frequent drivers to try other modes more often. **Table 2** shows the current parking prices at transit facilities around the Bay Area. In addition to a base

daily and/or monthly price, a higher fee could be charged for reserved parking and a lower fee could be offered to carpool commuters.

Table 2: Parking Fees at Bay Area Transit Facilities

	Daily Regular	Monthly Regular	Daily Reserved	Monthly Reserved
BART				
West Oakland	$9.50	NA	$13.00	$252.00
Most Other Stations	$3.00	NA	$6.00	$105.00
Caltrain	$5.50	$82.50	NA	NA
Golden Gate Ferry (Larkspur)	$2.00	$20.00	NA	NA
Vallejo Ferry Structure (City)	$6.00	$40.00	NA	NA
VTA Park-and-Ride	NA	NA	NA	NA
AC Transit				
Ardenwood	NA	NA	NA	$50.00
Richmond Parkway	$4.00	NA	NA	NA
SolTrans				
Curtola Park & Ride Hub	$3.00	$40.00	NA	NA

Technology Options

Table 3 below presents the various technology options and their advantages and disadvantages in terms of addressing the parking management objectives of the Harbor Bay and Richmond ferry terminals and maintaining efficient overall access for all modes to the ferry. Some key considerations are:

- Convenience and ease of use for the ferry patron
- Equity for ferry users without credit card or internet access
- Ease of maintenance and operation for WETA
- Ease and effectiveness of enforcement
- Minimization of operating/maintenance costs, as well as initial capital costs.
- Applicability to parking at other WETA ferry terminals

The options are as follows:

- Pay-on-board – The ferry vessels are already equipped to handle fare payments by cash or credit card. It would be relatively simple to expand that capability to include payment of parking fees. For enforcement purposes it would be necessary to have a system to identify which vehicles in the lot had paid. This would involve either numbering the parking spaces or recording the license plate number of the vehicle. The cashier would record this

information at the time of purchase and it would be made available on-line to the enforcement staff.

- Payment by Clipper Card – Clipper has gained wide usage by ferry riders because of its ease of use and universal acceptance by most Bay Area transit systems. BART has implemented a system that allows BART riders to use Clipper to pay station parking fees. The BART approach requires a separate Clipper tag-and-pay station for parking in the station. A similar arrangement would be needed at the ferry terminal. This system requires advance registration and issuance of a numbered hang-tag to be displayed in the vehicle.

- Parking Meters – An electronic "Smart" parking meter would be installed at each space. These meters accept coins and credit cards and can be solar powered.

- Parking Pay Stations – One or more parking pay kiosks would be installed near the ferry terminal pedestrian entrance. These stations can accept coins, currency and credit cards. Some versions are solar powered. A system to identify which vehicles have paid is included. The options are pay-and-display which requires the motorist to return to the vehicle and display the parking receipt on the dashboard, pay-by-space which requires the motorist to enter a parking space number into the pay station at the time of payment, and pay-by-plate which requires the license plate number to be entered with the payment.

- Parking Lot Control Gates – This would be an automated system of entry and exit gates in the parking lot. On entry the motorist would receive a parking pay ticket or enter a credit card into the gate actuator. A pay-on-foot pay station would be provided near the ferry terminal entrance and motorist could pay either before their ferry trip or upon return using cash or a credit card. The validated ticket or credit card would then be inserted at the exit gate upon departure. Some modern gate technologies can be combined with mobile payment for expedited entry and exit for regular parkers.

- On-line or Payment by Phone – Various vendors offer on-line and phone payment systems. Those wishing to park at the ferry terminal would use their mobile device or their phone to pay for parking when they arrived and parked in a space. They may be required to enter a parking space number or a license plate number, or display a hang tag depending on the system used. Most of these systems require pre-registration. These systems work well for managing reserved parking.

Table 3 - Comparison of Pricing Technology Options

Technology Option	Description	Advantages	Disadvantages
Pay-On-Board Ferry	Patrons would pay on-board the ferry vessel for parking	▪ Vessels are already equipped to accept cash & credit card advantages ▪ No special new equipment or technology required ▪ Addresses equity issues for those who do not have credit cards.	▪ Cash transactions are not secure ▪ Time consuming for the patron and the ferry cashier ▪ Newcomers may not understand the system ▪ Enforcement could be complex (either space numbers or license plate numbers need to be recorded at payment)
Clipper Card	A Clipper payment station for parking would be added on the terminal dock	▪ Clipper is already highly used ▪ Very fast, secure transaction	▪ Not all patrons use Clipper Cards, a second payment option needed. ▪ Patrons must sign up for the program ▪ New Clipper programing is required which is costly and time consuming ▪ New Clipper pay stations required ▪ Newcomers may not understand the system ▪ Enforcement is moderately complex
Parking Meters	Smart Meters (accept coins and credit cards) would be located at each space for payment	▪ People are familiar with this system ▪ The technology is proven ▪ Enforcement is simple	▪ Meters are expensive to install and maintain ▪ Inconvenient to pay with coins
Parking Pay-Stations	One or more pay stations/kiosks would be located near the terminal entrance	▪ Pay-and- display, pay-by-space or pay-by-license plate options available ▪ Paper currency, as well as coins and credit cards accepted ▪ Proven technology and people are familiar with this type of system ▪ Enforcement is simple	▪ Pay-and-display is inconvenient ▪ Machines can be difficult to operate and patrons may queue up waiting to pay. ▪ Machines are expensive to install and maintain
Parking Lot Control Gates	Patrons take a ticket or insert credit card on entry. Pay at a pay-station upon return.	▪ People are familiar with this system	▪ Delays at gates and pay-stations may occur ▪ Gates/machines are expensive to install and maintain ▪ Gates may interfere with circulation for drop-offs and pick-ups ▪ Equipment problems could cause major delays
On-Line Payment and/or Pay-by-Phone	Patrons pay for parking in advance or on arrival using computer or mobile device	▪ On-line payment is now quite common and convenient ▪ No equipment required ▪ Enforcement is simple	▪ Must retain a vendor to provide this service ▪ Patrons must sign-up for the program ▪ No options for those without on-line access ▪ No cash payment option ▪ Newcomers may find the system confusing

Costs and Revenues

The following tables show costs and revenues for a variety of pricing and payment options. **Table 4** shows the pricing options included in the revenue estimations. It is assumed that the Harbor Bay and Richmond terminals would have the same pricing. The following tables show revenues and costs for both Harbor Bay and Richmond together.

Table 4: Pricing Options Tested

Pricing	Daily fee	Monthly Permit
Price 1	$2.50	$30.00
Price 2	$3.00	$40.00
Price 3	$4.00	$50.00
Price 4	$5.00	$60.00

Revenue was tested for a daily fee-only option with no monthly permits, **Table 5**, and an option with monthly permits, **Table 6**. It was assumed that 80% of customers would purchase a monthly permit if it were available, and that the lot would fill up in all pricing options. If the parking demand decreased by 20% under the high pricing option (which is unlikely), the revenues would be equal to those estimated for the recommended pricing option. Revenues are lower under the permit scenario due to the low number of riders paying the more expensive daily rate. Revenues may be increased by capping the number of monthly permits at a lower number, thus requiring more riders to pay the daily rate.

Table 5: Estimated Annual Parking Revenue without Permits (2018$)

	Pricing Option 1	Pricing Option 2	Pricing Option 3	Pricing Option 4
Meter Income	$343,620	$412,344	$549,792	$687,240
Total Revenues	$343,620	$412,344	$549,792	$687,240

Table 6: Estimated Annual Parking Revenue with Monthly Permits (2018$)

	Pricing Option 1	Pricing Option 2	Pricing Option 3	Pricing Option 4
Meter Income	$68,724	$82,469	$109,958	$137,448
Permit Income	$158,976	$211,968	$264,960	$317,952
Total Revenues	$227,700	$294,437	$374,918	$455,400

Costs were also projected for monthly permit and no-monthly permit scenarios. The pricing options would not affect the program costs. However, other technology and policy options would affect costs: implementation of permits and meters vs. online-only payment. **Table 7** below shows the estimated costs for metering and enforcement equipment and 3rd party services such as software and permit processing, with an additional 5% contingency to account for unforeseen costs. Capital costs were annualized assuming full replacement of equipment after a 10-year life span (25 years for signage).

Table 7: Estimated Annual Equipment and Services Costs (2018$)

	Multi-Space Meters	Online Only (no meters installed)
No Monthly Permits	$21,563	$8,094
Monthly Permits	$13,681	$9,367

Table 8 below shows the estimated labor costs for enforcing and administering the program. The percent FTE and salaries used for this estimation are based on recent parking programs analyses in nearby cities. The options tested include policies which reserve or prohibit parking in certain spaces early in the morning to increase availability later in the day. In this case, enforcement would need to be done twice, once after the ferry during which parking is restricted, and once again after the last departure to check that new arrivals have paid.

Table 8: Estimated Annual Labor Costs (2018$)

	No Reserved or Time-Limited	Reserved or Time-Limited
No Permits	$308,396	$345,893
Permits	$323,516	$361,013

Assuming that metered ant permitted parking are implemented with reserved/time-limited spaces under the recommended pricing option 2, the total annual revenue would be nearly $375,000. Under this scenario, total annualized capital and labor costs would also reach nearly $375,000, and the program would approximately break even. If permits and reserved/time limited were not implemented, and payments were allowed online only with no meters purchased, the total annual revenue would be $550,000, total annualized costs would be $316,000 and the program would net $233,000 per year on average.

Recommendations

Based on the comparison of the management and pricing alternatives and the revenue/cost analysis for the provision of paid parking at both the Harbor Bay and Richmond ferry terminals, this section presents recommended management strategies and technologies to implement at the Harbor Bay ferry terminal. These recommendations can be expanded to other terminals including the Richmond terminal, once proven effective. This section also recommends initial pricing as well as mechanisms for raising or lowering prices.

Management and Technology

All of the management alternatives described earlier in this report could be used effectively at the Harbor Bay ferry terminal. Initially, it is recommended that WETA implement a daily fee for parking at the terminal. Monthly permits, reserved parking, or a carpool incentive could also be implemented based on the capabilities of the parking technology implemented, although WETA may choose to start with a simple system and implement additional features as parking demand and rider behavior shift in response to the new pricing.

In order to maximize convenience for ferry riders, and because they tend to take the ferry with a high frequency, it is recommended that payment be done primarily through a smartphone app and web portal. Parkers could also pay onboard the ferry, and physical parking meters or pay stations would not be needed. In order to pay, parkers would note the space number used and enter it into the payment kiosk or provide it to the cashier aboard the ferry. This would make enforcement consistent and eliminate the need to print a receipt, and thus also reduces the cost to implement and operate the program. This program would require some signage and marketing to encourage drivers to use the app and remind them to remember their space number if paying on-board.

Pricing

As a new parking fee, it is recommended that the daily price start out at the lower end and be increased after implementation if demand continues to be high and the parking management goals are not met. An initial fee of $2.50 per day is recommended as a low-end starting point. Assuming an average of 21 working days per month, a commuter driving to Harbor Bay every day would pay $52.50 per month if the daily fee were the only option.

This fee could be varied for reserved and carpool options. For reserved parking, a higher fee of around $5 may be appropriate if a guaranteed, reserved parking space is a high value to drivers, and this higher fee would also help ensure that not all reserved spaces are used, therefore leaving additional spaces for later ferry departures. A lower daily fee of $1.50 could also be used to encourage carpool parking.

Setting a rate for the monthly fee would depend on whether monthly permits are encouraged over daily fees, and on the level of demand for monthly permits. A low monthly permit around $30 would encourage regular drivers to buy a permit rather than paying a daily fee and provide an affordable option for those who cannot take another mode to the station. If the number of monthly permits is limited and if there is higher demand for permits, the permit price could be set higher. The downside of monthly permits is that they encourage ferry riders to drive every day, as there is no savings it they decide to use transit, ride a bike or use some other means of reaching the ferry terminal one or more days a week. Reserved spaces for permit holders would also be highly valued and justify higher permit costs.

At such a low price, it is possible that demand for parking will continue to fill the parking lot early in the morning. WETA should set a policy that allow staff the ability to raise or lower prices based on the observed demand. Parking occupancy should be evaluated every six months. If the lot at the station is full after the last ferry departs, the daily parking fee may be increased by 50 cents. If the lot is less than 95% full after the last ferry departs, the daily parking fee may be decreased by

50 cents. The monthly parking rate may also be increased or decreased proportionally with the daily fee.

Based on a daily fee of $2.50 and a monthly fee of $52.50, the expected revenues would be significantly less than the costs. To preserve revenues somewhat, the number of permits could be capped at 40%, which would result in an annual revenue of $121,000 from pricing the Harbor Bay terminal. The annualized costs to implement and operate parking pricing at Harbor Bay using an online portal with no meters and no reservations or time limited spaces would be $163,000. The revenues would remain lower than costs and WETA would have to subsidize parking at this terminal until the daily price was $3.50 or higher.

Improvements for Other Access Modes

To help encourage multi-modal access to the Harbor Bay Ferry Terminal, reduce pressure on the limited parking supply, and provide alternative options to paying for parking, WETA should continue to promote the use of alternative modes to access the stations. As described in the existing conditions, only 31 percent of Harbor Bay Ferry patrons access the station by driving alone, with the remainder of passengers walking, biking, taking public transit, or carpooling. This mix of modes is supported by the location of the station, walkability of the surroundings, and existing public transit and bicycling infrastructure.

One area that WETA could actively make improvements to encourage alternative access modes is in providing incentives riders to use ride-hailing, carpooling or ridesharing services to access the terminal. The growth of Transportation Network Companies (TNCs) and relatively low engagement that WETA has thus far had with these modes provides an opportunity to increase use of this mode. The remainder of this section describes the current TNC usage at the Harbor Bay Ferry Terminal and of ferry riders overall, and examples of transit partnerships and collaborations with TNCs. While the term TNC is primarily used to refer to ride-hailing services such as Lyft and Uber, this memo also addresses other technology-enabled shared mobility services including carsharing, bike and scooter sharing, ridesharing, and carpooling apps and platforms.

Current TNC Usage

Harbor Bay

In 2017, WETA conducted an on-board passenger survey to gather information about riders, including the modes used to access the ferry[1]. According to this study, Harbor Bay has the lowest Lyft/Uber access mode share out of all of the ferry terminals. San Francisco and Oakland have the highest Lyft/Uber access mode shares, perhaps due to the low parking supply and proximity to destinations (a recent Transit Cooperative Research Program report found that TNC usage is concentrated in downtown areas and a majority of rides cover very short distances[2]).

[1] Water Emergency Transportation Authority, *San Francisco Bay Ferry 2017 On-Board Passenger Survey Summary Report* (2018), prepared by CDM Smith.

[2] Feigen, Sharon and Colin Murphy, "TCRP Research Report 195: Broadening Understanding of the Interplay Between Public Transit, Shared Mobility, and Personal Automobiles." *Transportation Research Board of the National Academies, Washington, DC* (2018), pre-publication draft.

Since October 2017, Lime has been operating a bikeshare program within the City of Alameda. In March 2018, a summary of system usage was provided to the City Council, which showed that the Harbor Bay Ferry Terminal was second most common bike pick-up location, and the Main Street Ferry Terminal was the top bike drop-off and pickup location. This indicates that ferry riders overall are willing to use bikeshare for their first and last mile connections, but Harbor Bay Terminal passengers are more willing to use it in the evenings than the mornings, possibly due to a lack of available bikes near their homes.

There are no Ford GoBike stations in Alameda. Chariot, a demand-responsive shuttle service, does not operate any public routes in Alameda.

Richmond

As the Richmond terminal is not in operation yet, there is no existing information about how riders use TNCs. Lyft and Uber operate in Richmond as in other Bay Area cities, and it is likely that a portion of riders will use these services at least occasionally to access the station. No bike or scooter share companies officially operate within the City of Richmond, and there are no reports of activity by bike or scooter share companies operating without permits or sanctions.

Despite the lack of existing shared mobility options, bike share is likely to be implemented in Richmond with the opening of the new terminal. In November, 2017, the Metropolitan Transportation Commission approved a proposal from the City of Richmond to fund 15 bike share stations, primarily connecting the Richmond BART Station, the Ferry Terminal, and major destinations. In January, 2018, LimeBike began operating in the neighboring City of El Cerrito, and with the opening of the new ferry terminal, there may be demand to expand this or similar programs into Richmond.

Chariot does not operate any public routes in Richmond.

Examples of TNC and Transit Partnerships

Several transit agencies throughout the Bay Area have recently piloted first and lastmile TNC partnerships to encourage transit use by making TNC trips to and from transit stops more accessible and affordable. In addition to partnerships with Lyft and Uber, some transit agencies are partnering with other apps and platforms to facilitate carpooling and on-demand shuttles.

Uber and Lyft Partnerships

The Livermore Amador Valley Transit Authority (LAVTA, also known as Wheels), which serves eastern Alameda County, was one of the first transit agencies in the Bay Area to partner with and subsidize TNC rides. The program, which began as a six-month pilot in February 2017 and has been extended twice, provides a 50% discount off of Lyft Line, UberPOOL, and DeSoto Share (a ridesharing app offered by a local cab company) for rides that start and end in Dublin. The discount is funded through a grant from the Alameda County Transportation Commission. By offering a discount for rides that occur only within the City limits, the pilot encourages first/last mile trips to and from transit without subsidizing longer vehicle trips into or out of the City.

The Sonoma-Marin Are Rail Transit (SMART) has also recently started a program to subsidize Lyft Line trips to and from Marin County SMART stations. Funded by the county vehicle registration fee, the program provides a 50% discount on rides that start or end at a SMART

station, start AND end within the Marin County Service Area, and begin during the SMART hours of operation. This ensures that riders are making a connection to the rail service. This service was used 1,079 times in the first six months, or an average of 9 rides per weekday.

In addition to providing financial incentives, partnering with TNCs can also include providing space at the terminal for pick-ups, drop-offs, and for drivers waiting for their next pickup. Providing dedicated space for TNCs has become common at very high traffic areas such as airports to help ease congestion and guide passengers to the correct location. Based on current ridership and TNC usage, TNCs can likely be served with a regular passenger drop-off zone. But, if growth of TNCs, and potentially autonomous vehicles, continues into the future, an increasing amount of space may be necessary for these services.

Carpooling Apps

Apps and platforms that connect potential carpoolers can also be used to provide incentives for carpooling to the station. For example, BART recently starting a pilot partnership with the carpool matching app Scoop. Drivers who match with a carpool passenger and make a verified carpool trip to participating BART stations using the app receive a guaranteed parking space in the reserved carpool parking area. Scoop currently covers parking fees for these drivers as well, though the company is working on the ability to incorporate parking fees into the app, at which point drivers may be required to pay for parking again. This pilot program has been deemed successful by BART, as they have continued and expanded the program to additional stations, including the new Antioch station. The program is funded by an On-Demand Sandbox grant from the Federal Transit Administration.

On-Demand Shuttles

Companies such as Chariot provide demand-based shared rides between popular origins and destinations, generally for commute purposes. Chariot operates commuter shuttles with set routes that are updated regularly based on usage of existing routes and requests for routes from potential users of the service. Although Chariot has few partnerships with public agencies, they commonly partner with employers to provide employee transit. While the Harbor Bay Terminal alone may not be able to support a private shuttle, there may be opportunities to partner with nearby employers to serve ferry riders and employees not currently served by existing transit.

Carshare, Bikeshare, and Scootershare

Shared cars, bikes, and scooters offer another convenient and flexible last mile option for transit riders. Throughout the Bay Area, carshare spaces and bikesharing docks are provided at transit stations, such as Zipcar spaces in BART garages and lots, and the Ford GoBike stations, which are often located conveniently to transit. The Harbor Bay Ferry Terminal may not have enough traffic for permanent, physical infrastructure for these modes, but WETA could facilitate dockless bikes and scooters by providing designated areas for parking the bikes. A carshare space may be viable if there is also demand in the surrounding neighborhoods for a nearby carsharing vehicle.

Possible TNC Related Programs

WETA should consider the follow actions to encourage TNC participation of providing options for ferry terminal access at the Harbor Bay and Richmond ferry terminals:

1. Any net revenues from parking could be used to support a LAVTA type program, offering discounted TNC rides to and from the ferry terminals.
2. Discounts and/or reserved parking spaces for carpools could be provided, as well as partnering with Scoop or one or more of the other carpools apps providers.
3. A designated area for parking dockless bike share bikes could be provided. Information about the origins of ferry riders from the on-board survey could be given to bike share providers to help them position their bikes in the mornings at location accessible to high concentrations of ferry users.
4. Contacts could be made with nearby employers and Chariot to see if there is any interest in a developing a shared flexible transit service.
5. A parking area for motorcycles and scooters should be provided.