



Association of  
Bay Area Governments



Resources for  
Community Development



# TRANSIT ORIENTED DEVELOPMENT AND AFFORDABLE HOUSING

A Survey of Residents in Five East Bay Properties

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# Transit Oriented Development and Affordable Housing: A Survey of Residents in Five East Bay Properties

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## Foreword

This report presents key findings from a collaborative effort between the Association of Bay Area Governments (ABAG) and Resources for Community Development (RCD—a nonprofit affordable housing development company with over 2,000 units in the San Francisco Bay Area) to study the effects of Transit Oriented Development (TOD) locations on residents of affordable housing. The findings and analysis were first presented at the Association of Collegiate Schools of Planning conference, in the companion working paper entitled, “Effects of TOD Location on Affordable Housing Tenants: Travel Behavior, Access to Jobs and Services.”

This research project was conceived in 2011, through discussions among Dan Sawislak, Executive Director of RCD, Cynthia Kroll, originally as Staff Research Director at the University of California Berkeley’s Fisher Center for Real Estate and Urban Economics and then as Chief Economist at ABAG, and Vanitha Venugopal of the San Francisco Foundation about the impact of RCD’s TOD properties on residents’ quality of life and travel patterns. This pilot project, under management of Cynthia Kroll and Daniel Sawislak, surveyed residents at five RCD TOD and non-TOD properties. Participation was completely voluntary, and over 200 households responded.

## Acknowledgments

Graduate students and faculty from UC Berkeley’s College of Environmental Design also contributed to the project. Jonathan Malagon, a Master’s student in Berkeley’s City and Regional Planning Department, provided initial design and pretesting of the survey. Carlo De La Cruz devoted his summer internship and client project for the Masters of City Planning degree to this study, acting as survey manager for the implementation and analysis phases. UC Berkeley Professors Karen Chapple and Carolina Reid and RCD board member Marian Wolfe (also principal of Vernazza Wolfe Associates) reviewed the survey instrument and drafts at several stages. James Pappas, California Housing Partnership Corporation, and Robert Calkins, Contra Costa County, provided suggestions on project and survey design.

ABAG and RCD staff participated at all stages of the project. Pedro Galvao and Christy Leffall provided early conceptual input and the literature review and were part of the survey team, which also included Wally Charles, Carlo De La Cruz, Cynthia Kroll, Yeni Magana, and Bobby Lu. Sabrina Butler and Olivia King explained the operations of RCD and helped identify the properties included in the survey or pretesting. June Cummings, Michael Gliksohn and Michael Nobles were instrumental in the logistics of conducting surveys at RCD properties. In addition, property management staff of the John Stewart Company, including Sara Cha, Agueda Gomez, Wally Palega, and Morgan Or, provided essential support in working with residents and community members at each site. Members of other organizations also assisted in outreach and engagement with residents, including Anna Ybarra with Bridge Point Church and Rosemary Hatcher with Contra Costa Interfaith Housing. Liz Eckstein of RCD provided editorial input, and Leah Zippert and Victoria Rutherford of ABAG contributed to the format and design of the final document.

Special thanks to the RCD residents for sharing their experiences and opinions with us.

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# EXECUTIVE SUMMARY

Funding for affordable housing development in California is in the midst of a sea change. The Affordable Housing and Sustainable Communities program (AHSC), built on Cap and Trade revenues, is currently one of the few sources for affordable housing in California to replace dollars no longer available as redevelopment set-asides. This new funding comes with strong requirements for sustainability features in site selection, including a focus on Transit Oriented Development (TOD).

Two decades of research now demonstrate environmental, economic and social benefits are possible when housing is located near transit, but also show automobile use may continue even in TOD locations. Less research to date has explored whether TOD location of affordable housing can meet broader goals of increasing the stock of affordable housing and providing other social and economic equity advantages, while reducing GHG emissions from travel.

This study by the Association of Bay Area Governments (ABAG) and Resources for Community Development (RCD) examines the potential social, economic and environmental benefits accrued when affordability is paired with TOD by comparing affordable TOD housing and suburban non-TOD affordable housing. The study was conducted over the course of six months with responses from over 200 households at five affordable housing developments.

This report summarizes survey results, including residents' travel patterns, perceived changes in access to employment, satisfaction with nearby amenities, and improvements in quality of life since moving to the property. (See Key Survey Findings below). The report describes potential implications for policy makers and housing advocates and recommends strategies for producing greater sustainable (reductions in GHGs) and equitable (deeper levels of affordability) outcomes. (See Policy Implications below).

## Key Findings

- Residents of the properties in TOD sites use public transit more and car travel less than their counterparts in locations farther from transit options. Walking and biking are also options chosen when amenities are nearby.
- Among survey respondents, lower income households, in both TOD and non-TOD locations, drive less and take transit more frequently than higher income households. Higher income households travel further distances for work, school and recreational activities compared to their lower income neighbors.
- Households are sensitive to travel costs. The property with higher cost parking and fewer spaces had lower rates of car ownership and use, yet some households expected to reduce bus use following a transit system fare increase. Residents near free shuttle service

rode the bus at a rate similar to those in the two TOD properties.

- Residents traveled the greatest distances to work, to places of worship and for medical care. Of all amenities, residents were least likely to change place of worship or medical services after moving into the RCD property.
- The great majority of residents reported that access to jobs was the same or easier after moving to an RCD property. Respondents were no more likely to report access to jobs improved in TOD sites compared to non-TOD sites.
- Most of the households surveyed had previously lived in the same city or a neighboring city. A much smaller share came from a further away, at times moving closer to a job or schooling.

### Policy Implications

- Affordable TOD housing is an effective strategy for reducing GHG emissions and reduction in VMT.
- The environmental, economic and social benefits of TOD are strengthened by focusing on deeper levels of affordability, providing options for extremely low-income and very low-income households.
- Programs to increase the cost of vehicle ownership in TOD locations or boost convenience of transit beyond TOD locations can improve access or encourage households toward travel modes that reduce vehicle miles traveled in private vehicles.

- Affordable TOD is not the only mechanism to achieve both environmental and quality of life outcomes. By locating housing near work, retail, schools and recreation, reductions in GHG emissions and VMT are possible in both urban and suburban locations.
  - Affordable housing projects near amenities like grocery stores, parks and schools can produce significant VMT reduction, even outside of TOD locations.
  - Innovative programs such as free shuttle connections to bus and BART service can boost ridership by residents of affordable housing properties more distant from transit services.
- Social and economic ties may lead households qualified for housing assistance to seek opportunities close to their existing residences. **We need solutions for developing new affordable properties even where communities are not close to TOD.** Programs such as AHCS could incorporate alternative strategies to address the state's sustainability goals and meet the need for more affordable housing in locations around the state that do not meet the strict qualifications of TOD to qualify for funding.
- Employment issues are not resolved by transit accessibility alone, but a combination of travel alternatives, a denser population of employers, and property and community assistance services can improve employment options for affordable housing residents.

# I. INTRODUCTION

Funding for affordable housing development in California is in the midst of a sea change. Local redevelopment agencies were previously the single largest locally generated source of funds available to California communities for affordable housing. With the termination of redevelopment and the emergence of the state's Cap and Trade revenues, including the Affordable Housing and Sustainable Communities Program (AHSC), developers are more than ever looking for opportunities to link affordable housing with Greenhouse Gas (GHG) reduction strategies to help achieve sustainability goals set forth as part of California's Greenhouse Gas Emission Reduction program (SB 862).<sup>1</sup>

Once viewed as a secondary benefit of smart design, housing located near transit is now viewed as a significant component in achieving the State's goal of reducing GHG emissions to pre-1990 levels by 2020. For many advocates and affordable housing developers, transit oriented development (TOD) is not simply the preferred model, but one of the only viable options for developers competing for existing funds (both Federal and State) for affordable housing.

As developers and local jurisdictions compete for Greenhouse Gas Reduction funds and other financing subsidies, it will be important to fully understand the benefits and implications of using affordable TOD as either a sustainable (reduction

of GHG) or equitable (quality of life) strategy. Extensive research on the effects of TOD on residents' travel patterns has shown the potential benefit of lowering GHG emissions through reduced vehicle miles traveled (VMT). Research is at an earlier stage of study on the relationship between TOD-located affordable housing and GHG or VMT reduction, as well as the potential quality of life benefits of affordable TODs.

This study illustrates the experiences of more than 200 households in five San Francisco Bay Area affordable housing developments categorized as either TOD or non-TOD based on their proximity to major transit lines. The study identifies benefits achieved through the creation and preservation of affordable housing near transit, and also reveals possible strategies to reduce GHG emissions in non-TOD affordable housing sites.

The results contribute to the growing evidence that affordable TOD is an effective strategy for the reduction of GHG emissions and VMT for residents of affordable housing. The diverse experiences of residents in the properties surveyed also indicates that other viable strategies can bring a portion of the benefits of affordable TOD in places where transit options are limited. The development of housing within amenity and service rich areas (including retail, recreation, religious, and employment

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<sup>1</sup> California's redevelopment-linked Tax Increment Financing provided \$1.7 billion in funding for affordable housing for the 2005/06 and 2006/07 fiscal years. In that same timeframe, Low Income Housing Tax Credits provided over \$3.7 billion in financing and \$5.2 billion in housing vouchers. Although LIHTC far exceeds the total amount of funds generated through Redevelopment in that year, TIF was the single largest source of funds generated within California.

opportunities) that do not qualify as TOD can also produce significant benefits, improving both the quality of life for residents and meeting sustainability goals by reducing GHGs through reduced VMT. Thoughtful site selection remains a critical strategy for housing developers, sustainability advocates, and residents alike.

This research concludes at a time when California, a leader in green and sustainable policies, is once again a leader in rising housing costs, exacerbating the competition for existing affordable housing. Among developers, this has led to increased competition for land, driving up construction costs, as well as increased competition for funding and financing for affordable housing development. The result is a housing affordability crisis affecting more and more low and moderate-income households in urban and suburban communities.

Although this report focuses on potential benefits from locating affordable housing near transit, a discussion of affordable housing and TOD is

framed by the larger context in California to develop greater amounts of housing for people at low to moderate income levels. The study results show the value and utility of affordable housing combined with accessibility to transit and services as a strategy that impacts both greenhouse gas reduction and housing affordability in California.

Section 2 of this report describes how the sites were selected for the survey and provides additional background on the properties and their resident mix. Section 3 summarizes the significant responses to the survey, organized by major findings related to research questions. This is the heart of the report, with major subsections on car ownership and usage, public transit usage, distances traveled, and quality of life related responses. Section 4 discusses the implications of the survey results considering the broader context of the community setting, while Section 5 provides concluding policy implications and recommendations.



Survey sites reflect a mix of property and resident characteristics

## 2. RESEARCH APPROACH AND SURVEY DESIGN

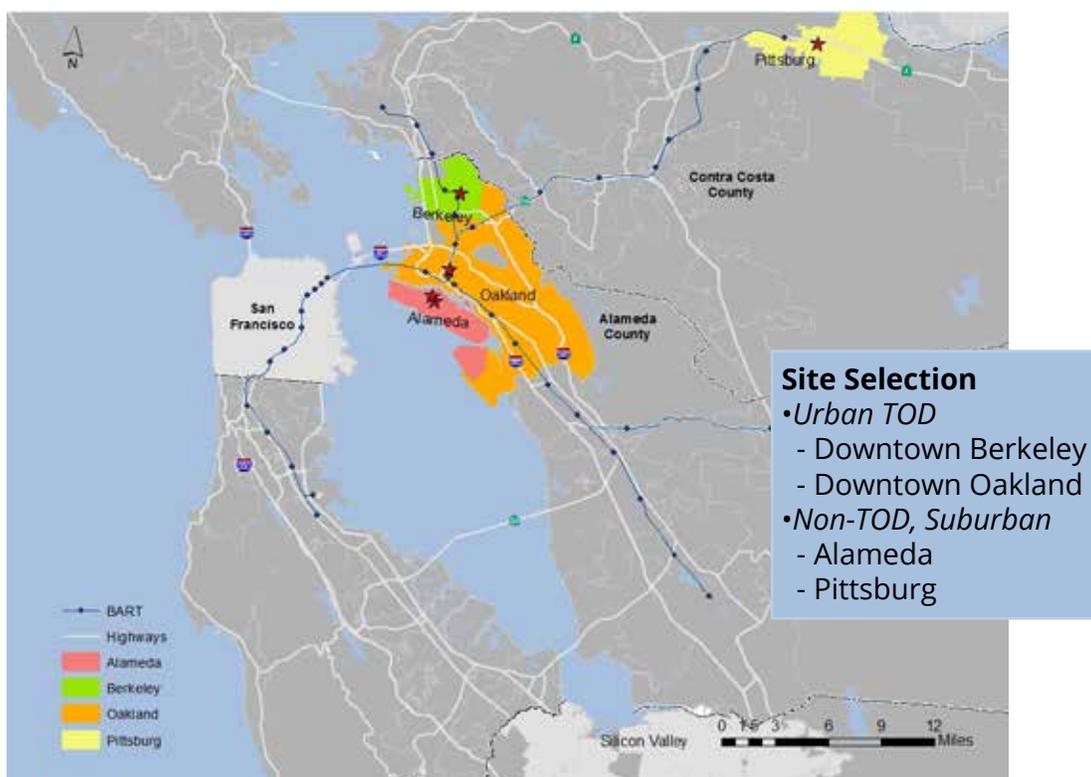
This project centered on the design and administration of a short survey of residents intended to collect information on:

- Household travel patterns
- Ease of accessing services and job opportunities
- Residents' satisfaction with the location and convenience of their current housing.

Background information provided by the households and RCD added context to the responses. The survey also provided several

opportunities for residents to respond to qualitative or open-ended questions.

The five properties located in four cities in the study sample have a mix of attributes and characteristics, with regard to accessibility of the location, surrounding amenities in the area, and the demographics of resident households. Two of the properties are in TOD locations (Downtown Berkeley and Downtown Oakland). Three are not in TOD locations—two in the City of Alameda and one in the City of Pittsburg.



Survey design began in the fall of 2013 and included several stages of review and pretesting. A final design for the survey was completed by the spring of 2014. Implementation and administration of the survey took place during the summer of 2014. Appendix A provides an extended discussion of the project methodology and survey design. The research approach supplemented survey responses with informal conversations and observations during survey periods and with demographic information provided by the property management company. Our research asked the following questions:

- Do residents at affordable TOD housing sites travel less distance to work, school and services than residents of affordable housing sites in other locations?
- Do residents of affordable housing sites at TOD locations make greater use of public transit than residents of affordable housing sites in other locations?
- Do residents of affordable housing sites at TOD locations have greater access to services (medical, groceries, etc.) and to enhanced employment opportunities (larger pool of jobs to choose from, higher salaried jobs, faster to find a job) than residents of affordable housing at other locations?
- How are other advantages or challenges provided by living in affordable properties affected by property location?

The detailed data collected allows for more nuanced analysis within these research questions on effects of household characteristics and trip type on mode choice and distance traveled. Open ended qualitative responses further expand on some of the findings from the survey. For additional in-depth reporting of the survey methodology, structure and results, refer to the companion working paper entitled, "Effects of TOD Location on Affordable Housing Residents: Travel Behavior, Access to Jobs and Services."

# RCD Property Characteristics in the Context of Transit Oriented Development

The survey was conducted across five properties located in four cities in Alameda and Contra Costa counties. The four cities vary in density, ethnic and racial demographics, as well as median income and percentage of people who are low income. Although each city, and by extension each property, varies in its specific characteristics and demographic composition, selection of the five sites focused on the ability to distinguish each site as a TOD or non-TOD property, as well as the type of location in a region wide context (downtown, more central suburban location, more distant suburban location). Observation of the sites as well as resident responses later highlighted additional location advantages and characteristics of each site and each city.

## Defining Transit Oriented Development

For the purposes of this study, TOD was defined using the California Department of Housing and Community Development (HCD) definition in its Transit-Oriented Development Housing Program. Developments were categorized as TOD if they were within one quarter mile of a qualifying rail or ferry station or bus stop with ten minute headways during the peak period<sup>2</sup>. The two downtown urban sites in our study, Berkeley and Oakland, both qualify as TOD sites by HCD's standards.

## The Berkeley Site – Downtown, Urban TOD

The Berkeley site is located within the central downtown business district. It is less than two blocks from Bay Area Rapid Transit (BART) and bus lines, as well as many of the city's main public attractions and amenities. Within a 10-15 minute walk residents can access movie theatres, the main public library, convenience stores and pharmacies, grocery stores, restaurants, and other recreational and retail stores. Moreover, the site is located immediately adjacent to the UC Berkeley campus, the largest employer in the East Bay, providing additional access to potential resources and employment opportunities.

The property is part of a larger sustainable development that includes the David Brower Center, a nonprofit office space, art gallery, and conference center. The Berkeley property is the only one in the study without free parking for residents and with less than one parking spot available per unit.

## Oakland – Downtown, Urban TOD

The Oakland site is comparable to Berkeley for its proximity to nearby transit and downtown amenities and services. The site is within two blocks of BART and bus, and a short walk from the main business district. The site is part of the growing investment and expansion of downtown Oakland, located in the newly redeveloped 'Uptown' neighborhood. Nearby services and amenities include access to Lake Merritt, retail stores and restaurants, art galleries, community

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<sup>2</sup> Peak period is defined as 7am to 10am and 3pm to 7pm on weekdays. For any transit stop to qualify, it must offer hourly service on weekday evenings from 7pm to 10pm and have at least ten trips on both Saturday and Sunday. (TOD Housing Program: Third Round Guidelines, 2013)

spaces, and the Oakland Ice Center. Other services include an Alameda County Social Services offices located two blocks away, as well as several city, county and state offices that provide important resources for individuals and families on public assistance.

Although the property is categorized as TOD due to its access to transit, the property offers each household one free parking space. Within a half mile of Oakland's Chinatown and Koreatown neighborhoods, the location offers easy access to many of the ethnic grocery stores and business frequented by residents.

#### **Alameda – Central, Suburban non-TOD**

The Alameda sites were developed as part of the city's plan to convert and develop the Alameda Naval Air Station and Fleet and Industrial Supply Center. The two properties surveyed are located within a few blocks of each other and are within walking distance to Alameda Landing, a newly developed entertainment and shopping center. At the time of this study the Alameda Landing development was partially completed, with main anchor retail stores such as Target open for business and other business and retail stores slated for opening within the next year.

The Alameda properties do not qualify as TOD under HCD's criteria, although the area has enough transit access to qualify as a Priority Development Area identified in Plan Bay Area, the Bay Area's Sustainable Community Strategy. The nearest BART station is located two miles away in Oakland and the closest bus stop is half a mile away from the two sites. Two free shuttle services, with stops within a mile of the sites, link Alameda to the Lake Merritt and 12th Street BART stations in Oakland. Although the sites are not located within the city's main business district, they are

close to recreational and education facilities. The nearest education facilities, College of Alameda and the Ruby Bridges Elementary School, are both within a half mile, while other middle and high schools are less than a mile away from the property. In addition, parks and recreational trails are located within a mile of the properties, providing access to green space for residents. Both locations include an ample supply of free street parking in addition to free, dedicated parking spaces for residents.

#### **Pittsburg – Outlying, Suburban non-TOD**

Pittsburg is about a 30 mile drive northeast from Oakland, almost 40 miles from San Francisco. The Pittsburg site is characterized by its proximity to Highway 4 as well as a large shopping plaza. Although the highway acts as a physical barrier to a number of amenities and services located on the opposite side of the highway, the site itself is none the less near retail and service amenities. A number of food establishments and grocery stores are within a quarter mile of the property along the major avenue leading to the highway. Several religious and educational amenities are also nearby. Two religious organizations are within a half mile of the property, while education facilities (Los Medanos Elementary, Heights Elementary, and Pittsburg High) are within one mile.

The Pittsburg site had the largest number of families with children among the five sites. In fact, residents under the age of 18 outnumbered adult residents, contributing to the strong need and interest in the after school program. Like the Alameda sites, it also has one free parking space assigned to each unit, in addition to free street parking.

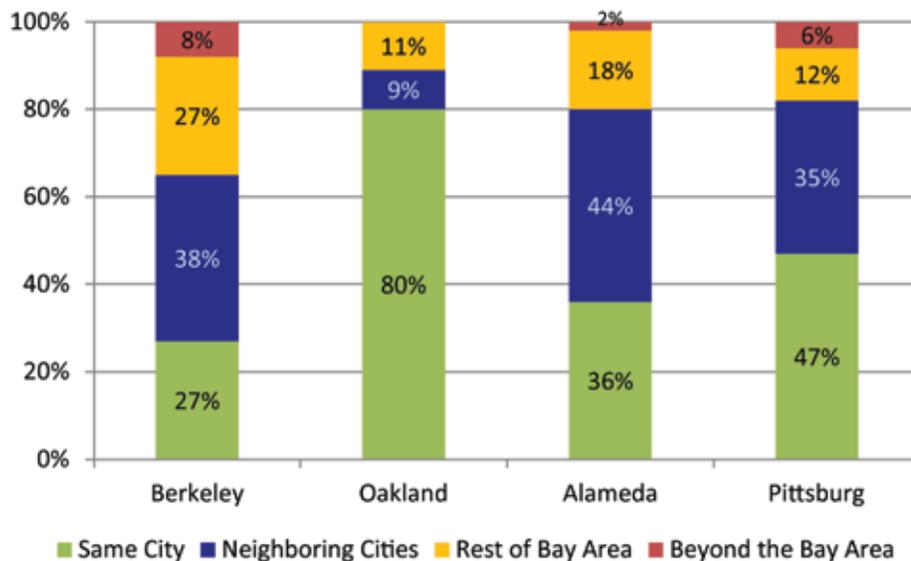
## Other Variations Among Sites

In order to compare survey results across geographies and properties, sites selected have similar characteristics, including the number of units, the range of incomes served, and on-site amenities provided, which include services and property management offices, laundry, community room, computer room, and shared open space. All sites were newly constructed between 2006 and 2010.

Although this study controlled for external variables such as neighborhood characteristics, level of subsidies, and residential characteristics, each property and its surrounding environment inevitably produced a unique context that informed and affected the everyday travel patterns and perceptions of residents. Two significant variations among properties include the community from which the household moved and the language mix spoken at the property.

Despite the lottery system used by the property owner and management company in allocating units, the properties tended to draw from nearby communities. Each property had a large proportion of residents that previously lived in the same city where the property is located, with neighboring cities providing the majority of the other residents, as shown in Figure 1. Anecdotal remarks by many of the residents pointed to the prevalence of households that were long term residents of the city or region, prior to moving. Some residents cited their desire to stay close to family and friends as a motivating factor for staying within the same city or area. They were also more likely to become aware of nearby housing opportunities.

**Figure 1: Previous Place of Residence of Survey Respondents by Property City**



Source: ABAG and RCD Survey, July and August 2014

This characteristic of the properties has implications for both responses and policy. The previous residence of the person providing survey responses influenced the benefits experienced of moving to an area with greater access and opportunities for employment and transit. In terms of policy, residents' travel patterns as well as satisfaction with their location should be viewed in the context of the alternatives offered within the city and neighboring cities more broadly.

The language mix spoken at the property presented some challenges in administering the survey. Of the responding households, about one third spoke a language other than English at home. Most frequently mentioned were Spanish (10 percent), Arabic (eight percent) and Chinese (seven percent), but 13 percent reported speaking

another language, among which were Tagalog, Farsi, Greek, Czech, Amharic, Somali, Vietnamese, Cambodian, Burmese, Mongolian, Punjabi, Nepali, Hindi, and Korean. About 80 percent of foreign language households also had at least one English speaker in the household, although in some cases, these were the children of the household, with the parent relying on the child to translate if necessary. The survey was conducted in three languages, English, Spanish and Chinese, with other households included where someone in the household or a neighbor could translate from English. Thus it is possible the responses exclude households speaking less common languages without English speakers in the household. (Overall response rates are described in Appendix B)



The survey was conducted in three languages.

# Affordability in the Region and the RCD Properties Surveyed

## The California Context

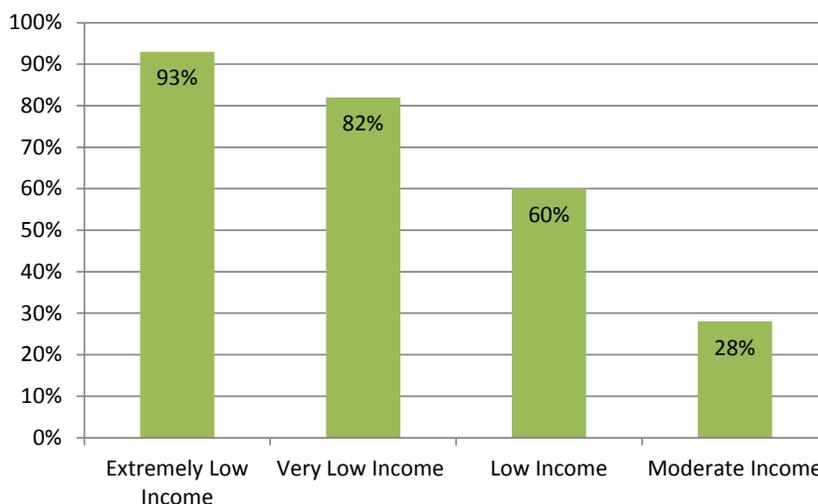
According to a recent report by the Legislative Analyst's Office, housing costs in California, for both ownership and rental, continue to outpace the rest of the country, especially in coastal areas such as the Bay Area.<sup>3</sup> Although the cost of housing varies throughout the state, a majority of California communities are well above the U.S. average of \$840 per month for rental units. Around the time of the survey, California's average monthly rent was about \$1,240, fifty percent higher than the rest of the country. Coastal Metro areas such as San Francisco are more than double the state average and about six times higher than Bakersfield, the state's least expensive metro. Oakland and other East Bay communities similarly have higher average monthly rent costs (\$1,390 per month) than the California and national averages.

The high cost of housing can be attributed to many factors, including the desirability of living

in coastal communities such as the Bay Area and the ongoing shortfall in the development of new housing, both affordable and market rate, to keep up with growing demand. As housing costs rise for renters and owners, the pressure on existing housing will only continue to exacerbate the current affordability crisis, disproportionately affecting households with the least financial resources, the extremely low income and very low income households.

Facing increased demand for affordable and adequate housing paired with a constrained housing supply, rising costs, and limited incomes, many households respond with a combination of trade-offs. These often include spending a larger share of income on housing, postponing or foregoing homeownership, living in more crowded or substandard housing, commuting further to work each day, or sometimes choosing to work and live elsewhere. Although the high cost of housing affects all communities and households of all incomes, it affects lower income households at greater rates. Figure 2 illustrates the share of California working families that spend more than 50 percent of their income on housing by income category.

**Figure 2 – Housing Cost Burden by Income Category • (Based on Percent of Area Median Income)**



Source: Center for Housing Policy tabulations of 2012 American Community Survey Public Use Microdata Sample.

<sup>3</sup> Legislative Analyst's Office Report, California's High Housing Costs: Causes and Consequences, 2015

### Income Levels at Survey Properties

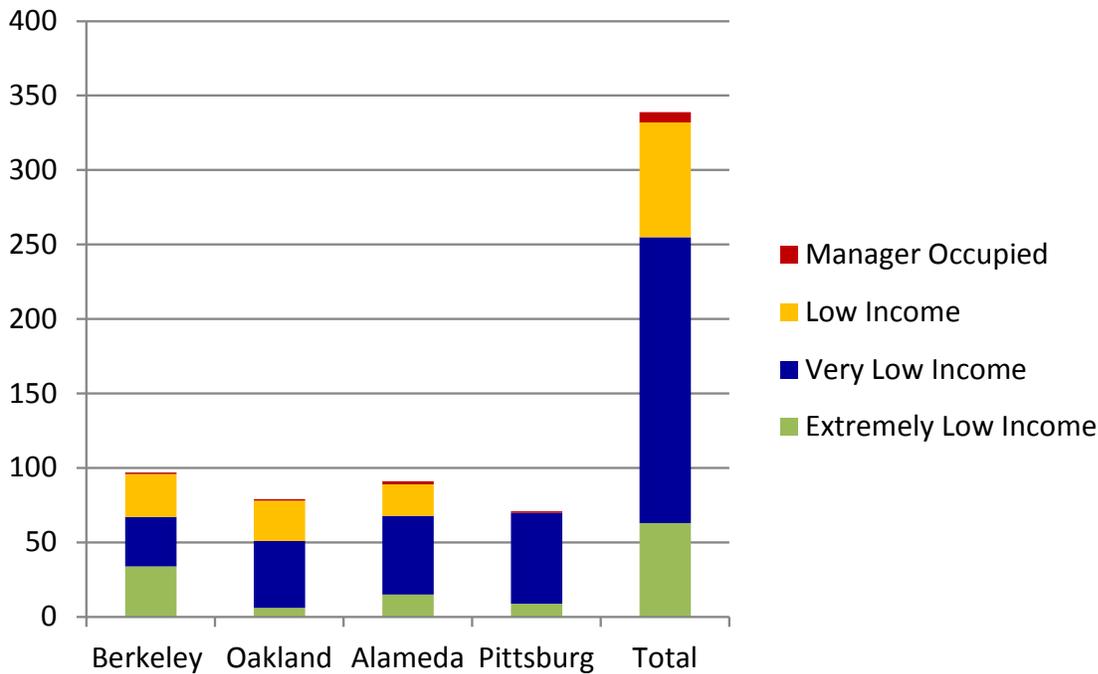
The properties in the study serve a range of income types, but with the exception of units set aside for management and maintenance of the properties all units are designated for families below moderate income levels. Figure 3 illustrates the number of units in each property and their affordability criteria. Households need only meet the restrictions on income upon the time of application and eligibility certification. Therefore, it is not a perfect representation of the actual household income for the residents, but the data does illustrate the mixture of affordability at each site. Berkeley is notable as having the largest number of units dedicated to extremely low income households, but also has almost equal

numbers of households categorized each as very low and low income. Apart from the Berkeley property, units at all of the other properties were primarily designated for very low income households. However, because residents do not need to move if incomes rise, some of the survey respondents fall into the moderate income range.



Throughout the report, key findings are presented by TOD v.s. non-TOD location and by income category.

**Figure 3: Units by Property Location and Income Category • (Based on Percent of Area Median Income)**



Source: Compiled by ABAG from property data provided by RCD.

In addition to the income restrictions for each unit, reported annual income was used to determine a household’s appropriate income category. Information on household income was drawn from data collected during the recertification process in which a household must report its annual income, but was added to the survey data only after randomly assigned identification numbers to units allowed separation of all identifiable information from the units personal and financial information. ABAG and RCD categorized surveyed households using U.S. Department of Housing and Urban Development (HUD) income categories for the San Francisco Bay Area region. HUD publishes an annual listing of income thresholds for each county based on the metropolitan area Median Family Income (MFI), adjusted for household size. Based on HUD’s income categories and survey

responses, this report defines four categories for a household’s affordability threshold:

- **Extremely Low-Income** – Households earning 30 percent of MFI and below
- **Very Low-Income** – Households earning between from above 30 percent to 50 percent of MFI
- **Low-Income** – Households earning from above 50 to 100 percent of MFI
- **Moderate/Higher-Income** – Households earning more than 100 percent of MFI.

Our analysis used these income categories to examine differences in residents’ travel pattern and other significant behaviors or perceptions by income. Throughout this report, key findings are presented by property location and type (e.g., TOD vs non-TOD, Berkeley vs Pittsburg) or by income categories (e.g., extremely low income vs higher income).

# 3. KEY FINDINGS

*Residents of affordable TOD housing drive less and travel shorter distances than residents of sites with less transit access. Where BART or bus transit is available, residents will take advantage of it. Yet it is also true that owning a car makes it more likely a resident will choose to drive to a destination, and inexpensive, available parking makes it more likely a resident will own a car. Nevertheless, both the TOD and non-TOD properties offered residents improved access to services relative to their prior locations, and residents often chose a mode of travel other than driving to reach nearby services.<sup>4</sup>*

The subsections that follow describe survey results on car ownership and use, public transit use, distance traveled, amenities, and quality of life.

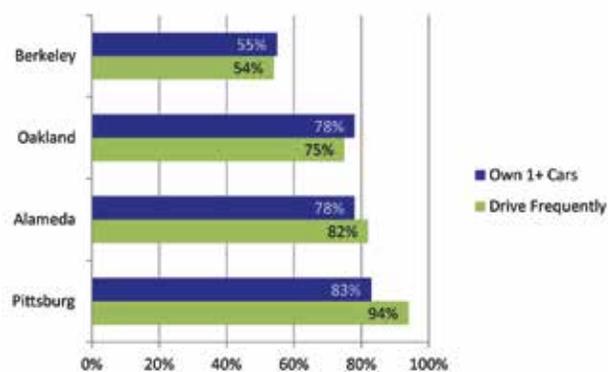
## Car Ownership and Use

Our findings indicate that the biggest single determinant of VMT—and therefore GHG emissions—is the ownership of a private vehicle. With the exception of Berkeley, which had restricted parking, ownership rates among the properties were similar (see Figure 4).

Vehicle ownership increased the likelihood that households travel by car on a regular basis. However, residents living in TOD were less

likely than their non-TOD counterparts to use a car during the week. Only 54 percent and 75 percent of residents living in the Berkeley and Oakland TOD sites, respectively, reported using a car regularly during the week, compared to 81 percent and 94 percent for residents of Alameda and Pittsburg properties, respectively. This trend of greater car use for non-TOD resident remained significant when controlling for car ownership. Residents of affordable TODs own and use cars at a lower rate than residents in non-TOD sites.

Figure 4 – Car Ownership and Use by City



Source: Compiled by ABAG from property data provided by RCD.

<sup>4</sup> All findings reported in this document were analyzed to ensure a 95% confidence interval on all significant findings. Further explanation on the methodology, coding and analysis of the survey results refer to the companion working paper entitled, "Effects of TOD Location on Affordable Housing Tenants: Travel Behavior, Access to Jobs and Services."

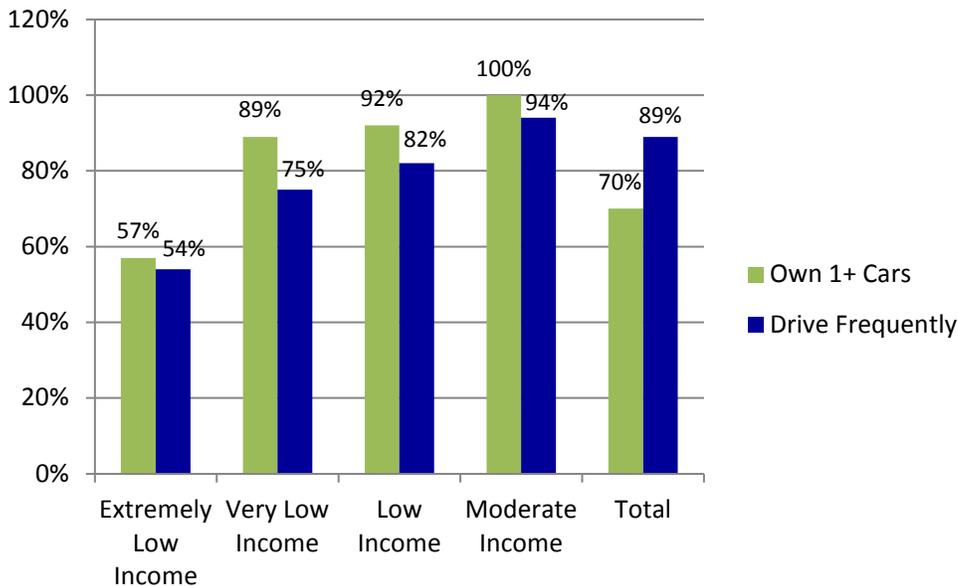
## Car Ownership and Use by Income Threshold

**Higher income households tend to drive and own cars at a higher rate, while lower income households have lower ownership rates and use a car less frequently.** When comparing the rates of car ownership and regular car use, the differences between TOD and non-TOD become clear. However, travel patterns and mode choice are not uniform across all income levels. As we analyze the travel patterns by income thresholds, a more nuanced model of travel patterns emerges for both TOD and non-TOD residents. Residents below the 30 percent of AMI threshold have the lowest car ownership rates among all residents in both TOD and non-TOD properties. Among extremely low income residents, 57 percent owned cars, while ownership rates were close to or above 90 percent for all other income groups, as shown in Figure 5.

Despite differences in driving patterns across income groups, when controlling for car ownership, it becomes evident that **even taking household income and car ownership into account, a TOD location significantly reduces automobile use.**<sup>5</sup> Even higher income households that owned cars were less likely to drive and more likely to use transit if they lived in a TOD location.

Some of the survey results on trip patterns and distances, discussed in greater detail later in this section, also point to additional factors contributing to the likelihood of trips taken by car. Residents were more likely to use a car when traveling more than five miles, traveling with more than one passenger, and for grocery related trips.

**Figure 5: Car Ownership by Income Threshold (by percent of Area Median Income)**



Source: Compiled by ABAG from property data provided by RCD.

<sup>5</sup> The statistical tests demonstrating this finding are reported in the working paper cited earlier, "Effects of TOD Location on Affordable Housing Tenants: Travel Behavior, Access to Jobs and Services."

### Restricted Parking and the Cost of Parking

Among the five properties within our study, four properties (three non-TOD and one TOD property) provided one free parking space for each unit. The exception is the Downtown Berkeley TOD property which has less than one parking space for each unit and charges for the use of a parking space. This may contribute to the lowest rate for car ownership and usage among all properties surveyed. The Berkeley property had a 20 percent lower rate of car ownership and usage compared to the similar Downtown Oakland TOD location (55 percent of households owned a car in Berkeley compared to 78 percent of households

that owned a car in Oakland). It is likely that cost of parking and the limited availability of spaces, combined with the higher proportion of lower-income households contributed to the low rate of car ownership and use at the Downtown Berkeley site.

*"It's very costly to pay for parking space in Berkeley; parking tickets are ridiculous and I spend unnecessary time and gas, driving around looking for parking."*

*--[Adult student, Berkeley]*



Four of the properties provided one free parking space per unit.

# Use of Public Transit

## Use of Public Transit by City

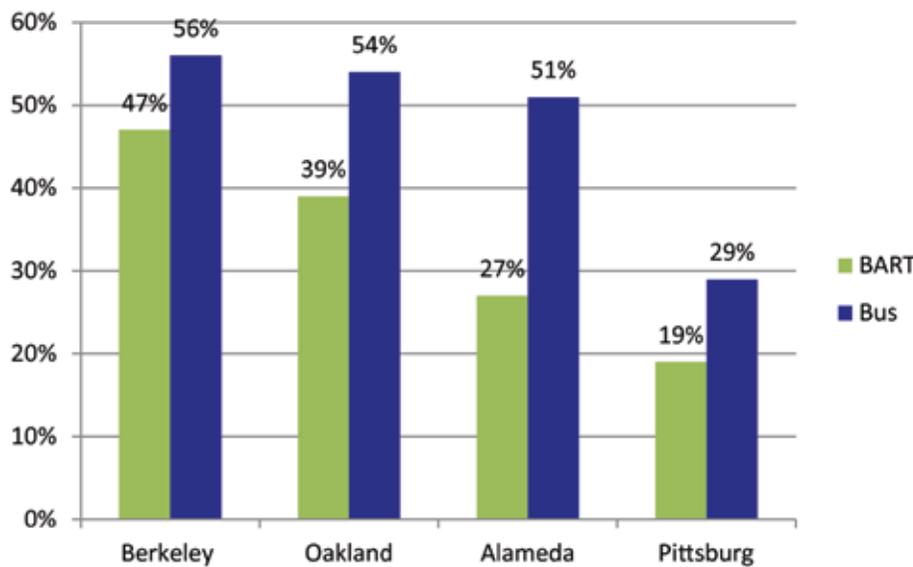
**Residents in TOD sites used bus and BART at a higher rate than non-TOD residents.** There were significant differences in travel mode choice, especially in relation to BART usage, when comparing the TOD localities to the non-TOD suburban sites (see Figure 6).

Households that live in TOD sites were more likely to use BART frequently, and often cited the convenience and proximity of BART as a strong motivator for using transit. Residents of both TOD and non-TOD localities provided anecdotal comments on their own perceptions of transit convenience. If a household perceived the transit station to be “too far away” they were less likely to use transit. The proximity to BART remained a strong indicator of a resident’s likelihood to use transit, regardless of whether the household owned a car.

Frequency of traveling by bus was also greater at TOD locations, but the Alameda sites also showed bus use comparable to the TOD sites. Although the nearest bus stops were half a mile away (greater than the quarter mile distance needed to qualify as TOD), residents perception of its convenience was significantly high. Currently, the Alameda site is served by six AC Transit lines, including a Transbay line that provides direct access to Downtown San Francisco, as well as the free Estuary Crossing Shuttle connecting to Lake Merritt BART station and the Alameda Landing Express—a free shuttle connecting the Alameda Landing retail development to Downtown Oakland and 12th Street BART.

By contrast, although the Pittsburg site is also within a half mile of bus lines, the bus service is less frequent, charges full fare, and was perceived by residents as inconvenient. Thus, **transit schedules and cost may also have an impact on VMT.**

Figure 6: Households Using BART or Bus at Least a Few Times Per Week, by City



*“Our home is connected to all major bus lines and BART. No need to really drive.”*

*--[Mother of three, Oakland]*

*“Public transportation is not as available or accessible as before. Therefore I drive more.”*

*--[Father of one child, retired and disabled, Pittsburg]*

Source: ABAG analysis from RCD resident survey, 2014

### Use of Public Transit by Income Threshold

Within the income range of residents, higher income households use BART more frequently and the bus less often compared to lower-income households. Alternatively, lower income households ride buses more frequently than their higher income counterparts and use BART less (see Figure 7). This trend was observed for both households that owned a car and households that did not. The difference between households that used public transit can be attributed to the actual (and perceived) higher cost of BART and the limited destinations reachable by rail. Open ended questions revealed that many residents felt that BART didn't "take them where [they] needed to go" <sup>6</sup> so they instead opted for the bus.

Other factors that influenced residents' transit use included a higher likelihood of using BART for commuting to work or traveling longer distances. Likewise, residents were more likely to use a bus if they were traveling longer distances or traveling to medical destinations.

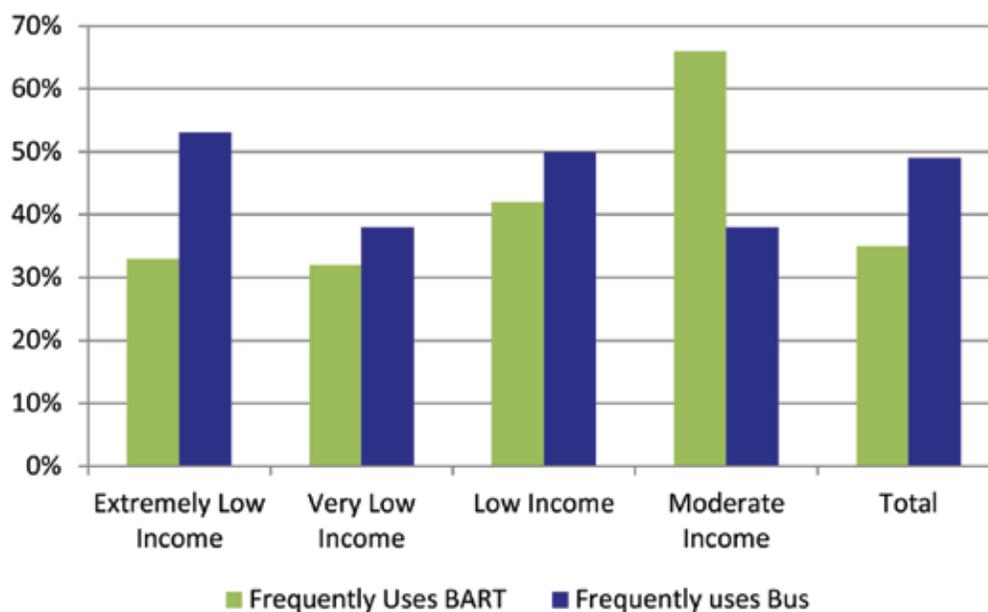
*"Don't live as close to public transit."*

*--[Husband with wife with two children, Pittsburg, explaining decreased use of transit since moving to the property]*

*"I have more bus options now. Where I lived before, not all buses, such as Transbay, went down there, or come as often."*

*--[Alameda retired and disabled female]*

Figure 7: Use of BART or Bus at least a Few Times Per Week by Income Category



Source: ABAG analysis from RCD resident survey, 2014

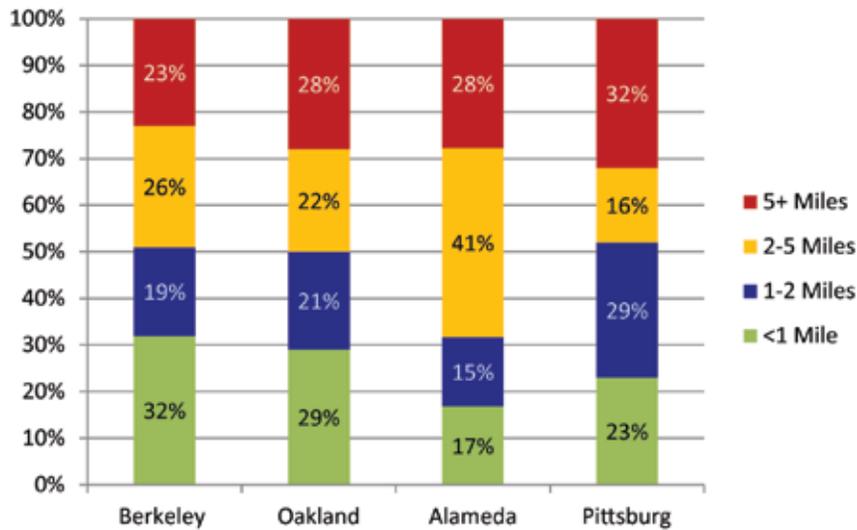
<sup>6</sup> Interview with retired Berkeley resident from RCD resident survey, 2014

## Distance Traveled

**Residents of TOD sites were more likely to be traveling to destinations less than a mile away. Alternatively, residents of suburban non-TOD sites were more likely to be traveling to destinations more than five miles away.** (See Figure 8). However, both Pittsburg and Alameda

residents still had a notable share of trips to destinations less than one or two miles away. As shown in Table 1, some types of destinations were equally or more convenient to the non-TOD sites as compared to the TOD sites. Pittsburg residents traveled the shortest average distances for groceries and school and below average distances for leisure activities. Nevertheless, overall after

**Figure 8: Reported Destinations by Distance Ranges and City**



Source: ABAG analysis from RCD resident survey, 2014

**Table 1: Average Distance Traveled by Destination, Mode and City (miles)**

	Berkeley	Oakland	Alameda	Pittsburg	Overall Average
Work	4.0	6.8	8.3	15.0	8.0
Groceries	2.3	3.3	2.6	1.8	2.5
Leisure	3.9	2.5	2.1	2.9	3.1
School	2.4	4.6	3.8	1.5	3.3
Medical	5.4	4.0	6.7	10.4	6.3
Worship	7.3	2.7	6.3	10.7	6.5
Car	5.6	4.6	6.3	8.2	6.2
BART	9.7	8.7	16.7	38.6	12.1
Bus	4.6	3.8	7.3	12.5	5.6
All Destinations, Modes	4.1	3.9	5.1	7.7	5.0

Source: ABAG analysis from RCD resident survey, 2014

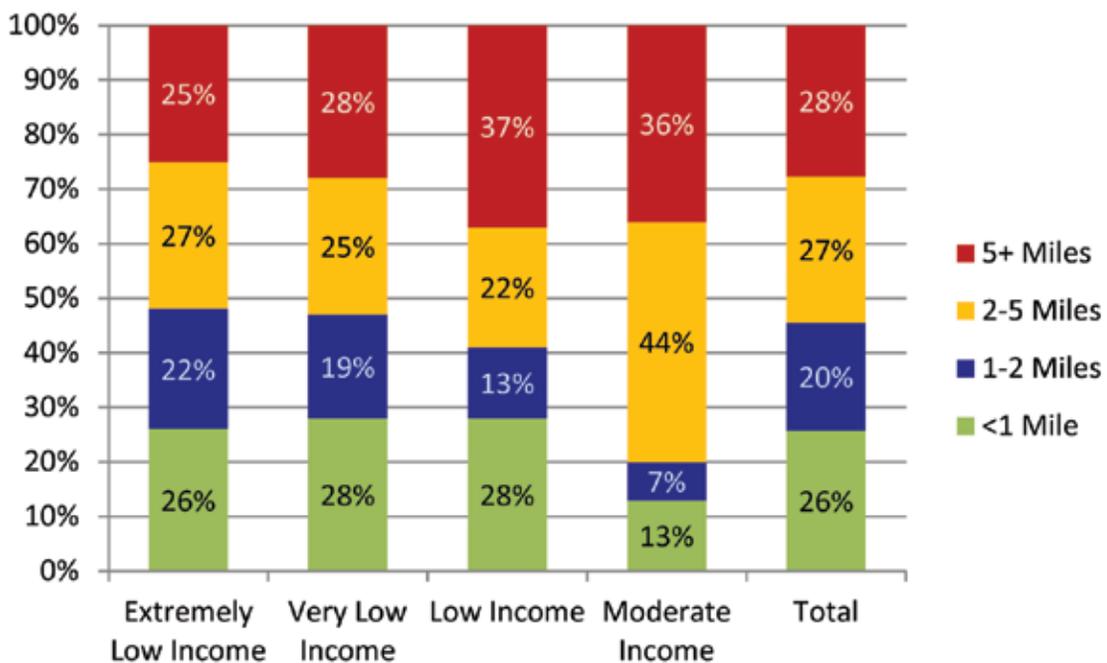
adjusting for type of destination and mode, living in Alameda rather than Pittsburg reduced average distances traveled by car by 19 percent; Berkeley compared to Pittsburg reduced car travel distance by 23 percent; Oakland residents drove to destinations 32 percent closer than Pittsburg residents.

Location and proximity to transit remains an important factor when measuring the distance traveled by residents. But for households that don't own a car, income also influences trip length. Households categorized as extremely low income and very low-income (households below 50 percent of AMI) had the largest share of trips taken within two miles. Households with incomes above 50 percent of AMI had a significantly larger share of trips that were more than five miles away and a sizable share of trips between two and five miles (see Figure 9). Although the

typical trip length varied across different income categories, further analysis of survey results reveal that location remained a strong predictor of a household's travel pattern, even after taking income into account, with shorter distances traveled overall by households living TOD properties.

Our findings indicate that both income and proximity to transit remain important factors in determining the distance and length of travel. Therefore, if one of the major intended outcomes

**Figure 9 – Percent Traveling Different Distances by Income Category**



Source: ABAG analysis from RCD resident survey, 2014

## Amenities and Location Advantage

Proximity to transit-rich areas, car ownership, and household income remain critical factors when considering household travel behavior and consequently GHG production through VMT. But other strategies and factors can also play a vital role in further reducing the amount of GHG emissions by residents, most notably the proximity of nearby parks, retail, schools, and recreational amenities.

**Residents of both TOD and non-TOD sites are more likely to walk if the destination is to a park, retail outlet, school, or recreational facility.**

Although transit remains an important factor in household car ownership and use, it is not the only factor influencing travel behavior. Residents, even in the suburban non-TOD sites of Alameda and Pittsburg, reported they often enjoyed the easy access of nearby amenities that allowed them to not use a car.

This ease of access is made possible by the strategic location of the properties. Although located further away from transit (BART and bus), properties in both cities are near shopping and parks. The selection of sites in amenity rich areas is driven in part by regulations and criteria set forth by affordable housing financing programs, such as the Low Income Housing Tax Credit (LIHTC).

Under the current LIHTC criteria affordable housing developers are granted more points for locating within a quarter mile from parks and

other services. By locating affordable housing *in amenity rich neighborhoods, residents were able to access the services and shops on a regular basis without relying on a car, further reducing GHG emissions through fewer VMT.*

Other types of destinations often require more distant travel. These included commuting to work, trips to visit friends, family, place of worship, child care, or a medical visit. When residents in both TOD and non-TOD locations took a trip for worship or medical reasons, they commonly traveled further than five miles. The difference in travel patterns by type of amenities suggests that not all nearby amenities may be used at the same rate by local residents. Anecdotal comments and survey results suggest that existing social ties to previous amenities or communities heavily influenced whether a resident was likely to change some amenity destinations.



In amenity-rich Berkeley, residents were able to access services and shops without relying on a car.

As Figure 10 illustrates, households were less likely to change their place of worship, medical care provider, and the school for their children. After moving to the RCD property, residents were most likely to change where they travel for groceries, recreation and entertainment. This implies that more than just proximity affects a household's decision to travel shorter or longer distances to reach particular services or amenities.

*"Everything from bank, groceries stores, library, and parks are within walking distance."*

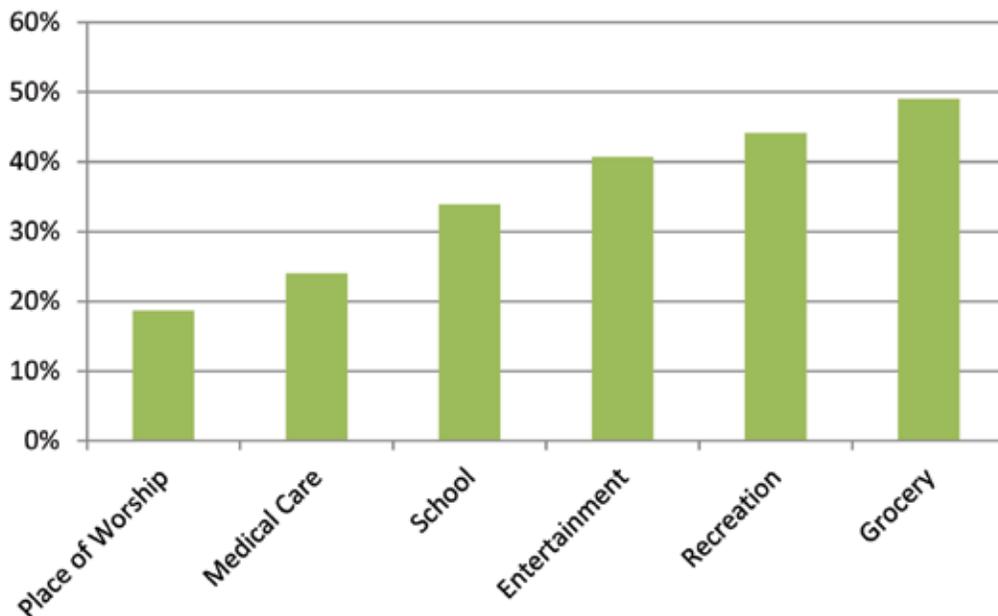
*--[Wife and husband with three children, Berkeley]*

Although the current criteria for LIHTC and other subsidy programs measure amenities as comparable advantages (giving equal points for a diverse range of different amenities), our findings indicate that **social ties and a resident's willingness to change location, greatly affect the actual use of nearby amenities.**

*"My doctor is further away now. But shopping for clothes, crafts, home, etc. is easier."*

*--[Woman with a disability living with a care giver, Alameda]*

Figure 10: Changes after Moving to an RCD Property



Source: ABAG analysis from RCD resident survey, 2014

## Quality of Life

Beyond analyzing the potential impact on GHG emission and VMT, this study also focused on potential improvements to residents' quality of life. The survey asked a series of questions designed to gauge a household's perceived level of satisfaction with current housing and the benefits made possible by living near transit and/or amenity rich areas.

Benefits and perceived improvements to a household's quality of life were reported by residents in both TOD and non-TOD properties.

Access to jobs and employment opportunities improved or stayed the same for the majority of residents in all properties. Only a small proportion of all residents (less than four percent at each site) felt that their access to job opportunities was reduced since moving to the property site (see Figure 11). This relative level of satisfaction can

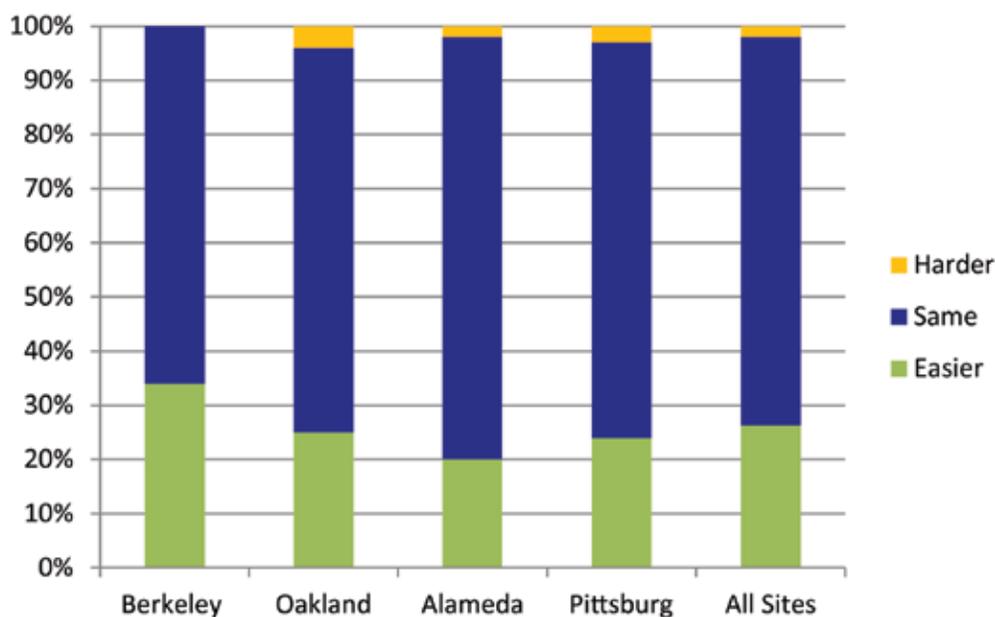
be attributed to factors including the proximity of potential retail employers (for example in downtown Berkeley or Alameda Landing) or the ability to use transit to access jobs in other urban employment centers like Downtown San Francisco and Oakland.

Qualitative responses to questions about employment opportunities provided further context and nuance to residents' perceived ease or complexity in accessing job opportunities. For example, one Berkeley resident commented that although there were greater employment opportunities in the surrounding area, the competition and requisite skills for those jobs also increased. Although access to job opportunities and employment increased or stayed the same for a majority of residents, ***access to job opportunities in the surrounding area or via transit did not necessarily translate into securing regular employment.***



The study also focused on potential improvements to residents' quality of life.

Figure 11: Access to Jobs from the RCD Properties



Source: ABAG analysis from RCD resident survey, 2014

Residents who were seeking job opportunities and employment commented positively on the assistance provided on-site either through counseling services or amenities offered. One Alameda resident wrote, “All I had to do was go to the [property] computer lab and the one-stop career center at the college.” A Berkeley resident commented, “We have the computer lab [on-site] and library accessible.” From an Oakland resident, “If I became unemployed, the job center to look for jobs is within walking distance.” And a Pittsburg resident noted, “The Internet [at the property’s computer lab] is free for job search.” Residents also appreciated the broader support the property facilities provide, from financial counseling to encourage timely payment of rent to after school and tutoring programs for children.

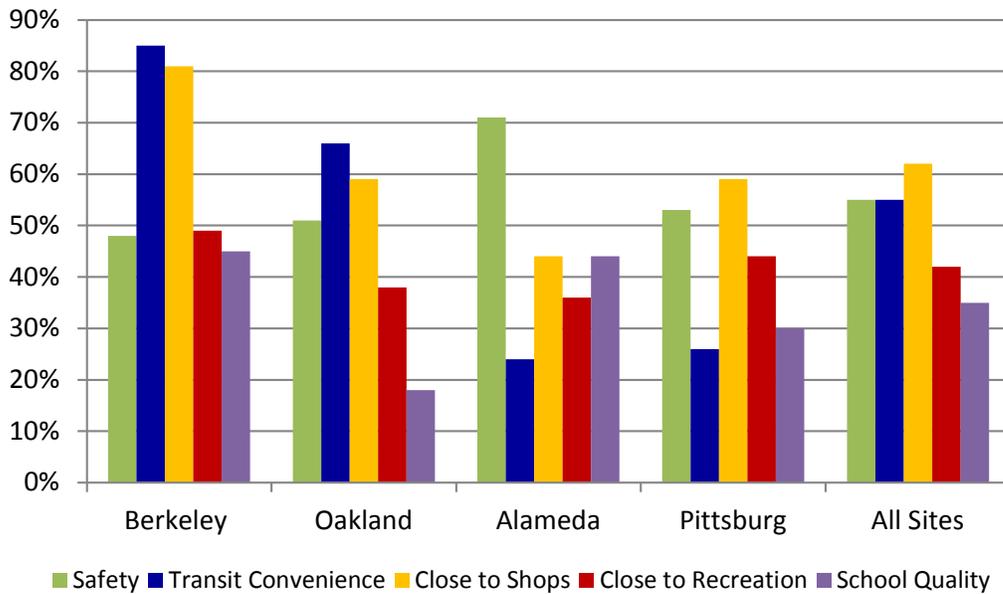
Other advantages attributed to the property location varied by city (see Figure 12). Berkeley

residents reported the highest satisfaction in transit convenience (84 percent of households) and nearby shops (82 percent of households). Alameda residents identified safety (71 percent of households) as the most prominent location advantage. Pittsburg residents identified nearby shops (61 percent of households) as the most prevalent location advantage. Oakland residents reported comparable levels of satisfaction to the other properties on safety, transit, shopping, and recreation (51 percent, 66 percent, 59 percent, and 38 percent respectively), but rated school quality the lowest (18 percent of households).

*“I feel that the possibility of being hired is a lot more challenging here in Berkeley. Especially if the job is here in Berkeley. Your chances of being hired for a middle class job(s) are a great deal more competitive.”*

*--[Adult student, Berkeley]*

**Figure 12: Percent of Households Responding Yes to Listed Advantage of Their Location**



Source: ABAG analysis from RCD resident survey, 2014

Variation in location advantages for each property can partly be attributed to the differences in transit access (TOD vs non-TOD) as well as the surrounding neighborhood or community. Residents' perceptions of each property were linked to the accessibility of amenities or services within walking distance as well as the services offered on-site. But residents also understood the opportunities and challenges of each property location as part of the larger narrative and reputation of each city. For example, many Oakland residents felt that although the immediate neighborhood was safe, the city as a whole remained dangerous. These larger narratives attached to each city help to form residents' perception and informed their personal level of satisfaction with the property.



Alameda residents identified safety as a location advantage

# 4. INCORPORATING THE LARGER CONTEXT

The study findings show that although policy and planning decisions (such as parking policies and proximity to transit) are essential, they are not sufficient in guaranteeing sustainable outcomes, such as reduction in GHG emissions through VMT. Moreover, as the quality of life related questions indicated, it was often the larger context of the surrounding city and community that affected residents' overall perception and satisfaction. Residents cited particular external factors such as the perception of a fare increase on public transit or the convenience of nearby shopping and retail as having a large role in determining household behaviors.

Two examples illustrate the larger environmental factors that may affect the quality and effectiveness of affordable housing and transit use.

## Planning for the Future – Alameda Landing

During planning and pre-development of the two Alameda sites, the future development of Alameda Landing as a mixed retail and shopping center was not part of the planning for the developments. At the time of this study, the Alameda Landing development was still under construction, with a few retail stores already

open, but with several more slated for completion by the end of 2015.

The proximity of the Alameda Landing development now provides a broad array of employment and retail opportunities that were previously unavailable. The retail development also now provides a free shuttle that connects residents to two BART stations (Downtown Oakland 12th Street and Lake Merritt). Although the Alameda sites did not originally include the Alameda Landing development as part the network of services and amenities that would be accessible to residents, it has significantly changed the perception and satisfaction among residents. Without the advantages of the retail development and transit connectors, residents might not have used BART or the bus as often or reported the same level of satisfaction or convenience in accessing retail and employment. The Alameda Landing example illustrates some benefits of neighborhood investments beyond housing that will accelerate GHG reductions through reduced VMT.

*“Because there are now free shuttle service and it takes me where I need to go.”*

*--[Wife and husband with two children, Alameda]*

## Perception and External Challenges: Transition to Day Pass

Berkeley residents reported the highest level of satisfaction and convenience in transit accessibility among all properties, yet many residents also reported concern over the cost of transit, in particular the anticipated increase in bus provider AC Transit's day fare. At the time of the survey, AC Transit was initiating a fare modification that would change its policy regarding single fares and transfers. It would no longer provide a transfer for a marginal cost, instead offering Day Passes upon the second trip, theoretically saving the passenger money if they took multiple trips a day. This fare modification was not necessarily a fare increase in the direct sense, but it was perceived as a doubling of

the fares and consequently was met with high levels of concern. Many of the residents cited the fare increase when justifying their use of other forms of transportation, including using a car or carpooling with a friend. The perception of the fare increase was strong enough to change at least a few residents' satisfaction with the transit service and altered their travel behavior as a result.

Although proximity to transit provides a strong indicator and motivating factor for residents, they do not on its own sufficiently explain or ensure particular outcomes. ***The larger context that informs residents' quality of life and travel patterns illuminates the kind of factors that influence transit choices, even in transit rich areas.***

*"AC Transit's fare increase has caused me to drive every day instead of taking the bus!!!"*

*--[Retired adult, Berkeley]*



Urban TOD supports local housing needs.

# 5. CONCLUSION

The results of the survey make clear some of the ways in which proximity to transit and household income levels affect travel patterns. The findings also highlight the range of advantages that affordable housing properties can offer to low income residents in a region with rapidly escalating housing costs. The results have implications for state and regional housing policy and for affordable housing development strategies.

## Findings

The findings of this report make clear some of the ways in which proximity to transit and household income affect household travel patterns.

- **A regional problem needing local solutions:** Affordable housing properties draw residents primarily from nearby communities.
- **Affordable housing residents respond to transit opportunities:** Residents of affordable housing properties in TOD sites use public transit more and car travel less than their counterparts in locations farther from transit options. Walking and biking are also options when amenities are nearby.
- **Lower income households make the greatest use of transit opportunities:** Among survey respondents, lower income households, in both TOD and non-TOD locations, drive less and take transit more frequently than higher



TOD siting of affordable housing is an effective strategy to reduce GHG emissions

income households. Higher income households travel further distances for work, school and recreational activities compared to their lower income neighbors.

- **Households are sensitive to travel costs:** The property with higher cost parking and fewer spaces had lower rates of car ownership and use, yet some households expected to reduce bus use following a transit system fare increase.
- **More households will walk or bike to nearby destinations:** By reducing the distances between housing and work, housing and retail, and housing and recreation, reductions in GHG emissions and VMT are possible in both urban and suburban locations.
- **Residents traveled the greatest distances to work, to places of worship and for medical care:** Of all amenities, residents were least likely to change place of worship or medical services after moving into the RCD property.
- **The great majority of residents reported that access to jobs was the same or easier after moving to an RCD property:** Respondents were no more likely to report access to jobs improved in TOD sites compared to non-TOD sites.
- **TOD is a viable and highly effective strategy to reduce GHG emissions through the reduction of VMT, but it is not the only mechanism to achieve both environmental and quality of life outcomes:**
  - Affordable housing projects near amenities like grocery stores, parks and schools can produce significant VMT reduction, even if transit links are weaker than at TOD locations.

- Innovative programs such as free shuttle connections to bus and BART service can boost ridership by residents of affordable housing properties more distant from transit services.

## Recommendations

### Affordable and Green

Due to current standards and policy measures that incentivize strategic site selection—such as proximity and access to surrounding amenities and services—affordable housing development has the potential to further promote sustainable goals and outcomes apart from simply providing greater access to transit. The environmental, economic and social benefits of housing near transit are strengthened by focusing on deeper levels of affordability, by ensuring that developments include units dedicated to extremely low-income and very low-income households. ***Sustainability and equity are not competing goals; by focusing on equity as an outcome we strengthen the effectiveness of sustainable strategies.***

### Weighting Amenities by Relation to Travel Patterns

The type of amenity and the larger social context influence a resident's willingness to use nearby services and amenities. The survey results suggest that a ***reevaluation of the weighting of amenities in allocating funds, focusing on the type of amenity and likelihood of using a nearby service, could extend resources to additional projects with the potential for providing beneficial outcomes in reducing GHGs and improved quality of life for residents.*** This is particularly relevant in suburban areas which have few TOD sites to offer but a growing low income population as well as lower land costs.

### Sensitivity to Costs

Because low income households are very sensitive to costs of travel, cost factors become tools for influencing the level of driving or use of transit.

***Restrictions or pricing on parking in transit rich areas combined with transit subsidies or free shuttle services to access transit can contribute to goals of GHG emissions reduction.***

### TOD and Beyond

Affordable TOD continues to be a viable model for reducing GHG and the total VMT taken by low-income households. However, high land costs and fierce competition in urban areas and the amount of land available in TOD locations will limit the ability to reduce GHG emissions and VMT through this approach. TOD should not be the only solution for meeting the housing needs of low and moderate income households. Non-TOD localities, those not well serviced by transit, can still promote reductions in VMT and GHG emissions by supporting affordable housing developments close to amenities and services such as retail, grocery stores, schools, recreation, and employment opportunities. ***By reducing the distance needed to travel for everyday activities and errands, residents in non-TOD sites can reduce their GHG emissions and VMT by utilizing nearby services.***

### Flexibility in Setting Goals

TOD policy and programs that provide a mixture of different levels of affordability may provide needed accessibility for households that often travel shorter distances (typically lower income households) while providing opportunities for

households that often travel further distances by car (typically moderate income households) to choose alternative and sustainable transportation options. ***Survey results suggest a strategy for affordable housing in TOD locations may be most effective when focused on different types of benefits at different income levels.***

### Local solutions to address local needs

Low-income households are struggling in every local jurisdiction and region of the state. The high prevalence of survey respondents who relocated within the local area points to the need for housing to serve existing residents in the local areas. ***Strategic development of both TOD and non-TOD in urban and suburban should continue to be supported in order to meet the local housing needs of every community, while furthering state wide and regional goals of sustainability and GHG reduction.***

# APPENDICES



The survey team developed Children's Surveys to occupy and inform children while the parent responded to the survey.



## Appendix A -- Survey Methodology\*

*\*This methodology section is drawn from a preliminary report entitled, "Effects of TOD Location on Affordable Housing Tenants: Travel Behavior, Access to Jobs and Services." The preliminary findings were presented at the American Institute of Certified Planners conference in 2014.*

Preparation for the survey, a written questionnaire, took place over several months, during which time the research team developed questions, solicited feedback on the approach from RCD staff, set up an advisory group for further feedback on overall approach, the sample, and questionnaire design, and pre-tested a series of versions of the questionnaire. One member of the research team took on the role of survey manager. The manager developed a schedule for administering the survey in each city, with separate but overlapping time periods for each site as well as a survey protocol described below.

### *Questionnaire Design and Pretest*

Survey design had to meet several goals, as follows:

- 1) Provide information on residents' travel patterns (including destination, mode choice and distance traveled)
- 2) Provide information on the ease of accessing services and job opportunities,
- 3) Identify residents' satisfaction with the location of their current housing relative their previous home; and
- 4) Provide enough background information on the household to help explain differences in responses.

Furthermore, the survey design had to be sensitive to households with limited reading ability and language facility, including non-English-speaking households. Finally, we expected the time required to answer the survey to be a factor in response rates, so the level of detail desired needed to be traded off with the time burden of answering the questions. The English version of the full survey is presented in Appendix C.

The first page of the survey explains the purpose, the gift card incentive, privacy guarantees, as well as the completely optional nature of the survey. The next page begins with asking for information on each member of the household (relation to the respondent, age, and whether the person is employed, a student, retired, or other, such as disabled). This portion of the survey is followed by a few simple questions on the location of their previous residence and vehicle ownership or use.

The next set of questions asks about travel modes and destinations. First, respondents are asked to check off from a set of choices how frequently household members travel by BART, bus, car, walking, bike, or other means. Then respondents are asked to list up to six destinations members of the household travel to regularly, giving the location, who is traveling there, mode(s), frequency, and noting variations in the routine (for example, do

they use a different mode at night compared to daytime). A series of questions follow on whether destinations changed when they moved into their current housing, and whether these destinations are easier or harder to reach compared to where they lived before.

The questionnaire ends with short questions on employment change and ease of finding a job, a check list of advantages of their current housing location, background occupation and demographic information, and whether the household would be willing to participate in a more detailed interview. The survey took most respondents 15 to 20 minutes to complete.

Questions regarding household income, lease agreements, and unit size were intentionally omitted from the survey. The survey team relied upon information collected by the property management company in order to analyze demographic information regarding each household to determine important social characteristics. Compiling background demographic and personal information on the units followed strict procedures that protected the anonymity of the residents and households.

The questions used in the final form of the survey were developed through a rigorous review and pretesting process. The first questionnaire was pretested with a population at a UC Berkeley married student housing complex. This pretest provided valuable feedback on the clarity of questions as well as the effects of wording and visual layout on the ease and accuracy of response. This information was used to create a version 2 of the survey, which was sent to a group of advisors, including a professor of housing at UC Berkeley, a consultant on housing policy who is also on the Berkeley Housing Advisory Commission and on the board of RCD, research staff of a housing advocacy organization, and a county housing official who had extensive experience surveying Contra Costa County affordable housing residents. Their feedback was used to refine the survey instrument and the approach to survey administration.

After further revision, volunteers from ABAG responded to the next survey draft. This led to refinement of survey language and increased opportunities for open ended responses (“Don’t you want to know *why* they make these choices?” our administrative aide asked us). The last pretesting exercise took place at an RCD property that was not included in the survey sample. The populations taking the survey in this pretest were participants in a regular social services meeting, and were residents of special needs units on the property. This population received gift cards for participating in the survey. The respondents completed the survey and then spoke with us about the experience. This last pretest led to some small revisions in the survey instrument but was also very informative in terms of survey administration techniques. We concluded that a personal presence would be important to answer questions and to provide assistance to those with physical or learning disabilities. We also concluded that it would be important to have survey instruments in languages other than English. The survey was translated into Chinese and Spanish by summer interns at ABAG and checked by other native speakers.

### *Survey Administration*

Survey administration depended on a mixture of tactics and methods designed to maximize the household response rate, while working within the limitations set forth by the property owner and manager, the limited budget, and time-table to distribute and collect the survey. The outreach strategy used five main elements to encourage participation and response, including i) letters, fliers and copies of the survey delivered to each individual household's door; ii) a \$20 gift card for each household that completed and returned the survey; iii) presence of the survey team sitting at tables on-site to introduce the survey and increase its visibility; iv) informational evening gatherings during the week that survey staff was present at each site where survey response assistance was available and gift cards were distributed; v) entry of the name of each household that completed the survey in a raffle drawing for an iPad mini. Four iPad minis were raffled, one in each city.

The general structure of the outreach strategy was similar for each site, but was tailored to the specific characteristics of the property. We tabled daily for five to six days at properties in Berkeley, Oakland, Pittsburg and one of the two properties in Alameda. Tables were set up in the lobby or central courtyard or near the mailboxes, with survey staff present for at least three hours/day. In the first two properties (Berkeley and Oakland), we varied time of day, but we found there was little interest in morning hours (7:00AM to 10:00AM) and few adults around midday (11:00AM to 1:00PM), so tabling was concentrated from 4:00PM to 7:00PM in the last cities. The second Alameda property was not conducive to this type of tabling—the apartments are centered around the parking lot with mailboxes spread among several different locations along the parking lot within a half-block long area. Instead, we posted flyers announcing tabling at their neighboring property. Even with repeated follow-up in the form of flyers and additional copies of the survey, this brought a response rate of only 15 to 20 percent. Ultimately, the team tabled outside the property's office on three occasions—two late afternoon/early evening periods and one Sunday morning to coincide with a neighborhood church service on the property, finally boosting the response rate at this property to almost 40 percent.

Beyond the information and assistance that was provided through tabling, word of mouth was effective in reaching additional households. Perhaps the strongest networking happened through the children living on the property. Early in the outreach process it became clear that engagement with residents and parents was influenced by the dynamic and demeanor of the children in the family. We developed Children's Surveys to occupy children while the parent responded to the survey. The Children's Surveys were designed to relate to the main Resident's Survey but also as a fun activity. Children's Surveys were available at all five sites and were particularly helpful in the developments that had a large community of children who regularly played in the common space(s). The Children's Surveys not only allowed the parents to fill out the survey with minimal distractions, it also allowed the children to be informed messengers about the purpose of the survey, what we were asking, and why it was important for residents to fill out. By using the Children's Survey as an educational opportunity, we increased the response rate for households with children. Older children were also ambassadors of the survey, bringing their parents in on raffle day to fill out the survey and be eligible for the raffle.

Holding informational events further increased the response rate. This was most effective where there was already a core of residents who were active in the community. The RCD executive director attended two of the events and the evening provided not only additional responses but also an opportunity for feedback from the residents on a variety of aspects of living in the project, from barriers to car share use (credit card required) to temperature control issues in some of the units.

## Appendix B -- Survey Response Rate\*

*\*This Survey Response Rate section is drawn from the preliminary report entitled, "Effects of TOD Location on Affordable Housing Tenants: Travel Behavior, Access to Jobs and Services." The preliminary findings were presented at the American Institute of Certified Planners conference in 2014.*

The response rate, excluding vacant units, was 60.5 percent across the five properties.<sup>7</sup> The rate of response varied significantly by city, as shown in Table B-1.<sup>8</sup> The TOD locations had higher response rates than the more suburban locations. However, close to 50 percent of households responded in even the more suburban locations. The response rate does not differ significantly by household income category (see Table B-2). The lowest rate of response was among units with households in the income range of \$24,000 to \$40,000, neither the highest nor the lowest range of incomes among property units.

City	Number			Percent		
	0	1	Total	0	1	Total
Alameda	46	45	91	50.6%	49.5%	100%
Berkeley	35	62	97	36.1%	63.9%	100%
Oakland	22	58	80	27.5%	72.5%	100%
Pittsburg	35	36	71	49.3%	50.7%	100%
Total	138	201	339	40.7%	59.3%	100%
% Excluding Vacant	131	201	332	39.5%	60.5%	100%

Pearson chi2(3) = 12.4630 Pr = 0.006

Income category	Number			Percent		
	0	1	Total	0	1	Total
Less than 12,000	30	52	82	36.59	63.41	100
\$12,000 to \$24,000	34	55	89	38.2	61.8	100
\$24,000 to \$40,000	43	41	84	51.19	48.81	100
\$40,000 to \$59,999	18	25	43	41.86	58.14	100
60K plus	13	28	41	31.71	68.29	100
Total	138	201	339	40.71	59.29	100

Pearson chi2(4) = 6.0328 Pr = 0.197

<sup>7</sup> Response rate before excluding vacant units was 59.3 percent

<sup>8</sup> Stata software calculated Pearson's Chi-Squared statistics to show the level of significance of differences in the distribution of responses.

Response rates also varied significantly by ethnic group, when the entire pool of households is analyzed. White, Black or African American, and mixed ethnicity households were most likely to respond while Hispanic households were the least likely to complete the survey. These differential response rates may in part be related to where the households reside, as shown in Table B-3. For example 57 percent of Hispanic households in TOD sites responded to the survey, compared to only 32 percent in the non-TOD sites. At this geographic level, the Hispanic response rate is much closer to the average overall response. However, a much higher proportion of Hispanic households lived in the suburban sites, compared to other ethnic groups.

Table B-3: Ethnic Variations by City Property and by Response Rate					
	Ethnicity (Row 1, Percent of population in city property; Row 2 Response rate of ethnic group in city)				
City	Asian/Pacific Islander	Black or African American	Hispanic	Other or Mixed	White
Alameda	34.8% of HH 45.2% response	46.1% of HH 56.1% response	12.4% of HH 18.2% response	0% of HH --	6.7% of HH 66.7% response
Berkeley	2.7% of HH 50.0% response	56.8% of HH 71.4% response	6.8% of HH 40.0% response	14.9% of HH 72.7% response	18.9% of HH 71.4% response
Oakland	26.7% of HH 70.0% response	36.0% of HH 74.7% response	2.7% of HH 100% response	28.0% of HH 81.0% response	6.8% of HH 60.0% response
Pittsburg	10.0% of HH 42.9% response	55.7% of HH 53.9% response	28.6% of HH 45.0% response	1.4% of HH 0% response	4.3% of HH 66.7% response
Total	19.5% of HH 53.3% response	48.4% of HH 63.1% response	12.3% of HH 39.5% response	10.7% of HH 75.9% response	9.1% of HH 67.9% response
Statistics for ethnicity differences in response rate: Pearson chi2 (4) = 12.5145 Pr = 0.014; when ethnic differences in response calculated by city, the differences were not significant.					

While response rate differences show some bias in the sample, the sample is large enough that we are able to explore the characteristics of different locations and household characteristics in the analysis.

## **Appendix C – Transportation and Housing Survey for Residents**

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# Transportation and Housing Survey for Residents

**Resources for Community Development (RCD)\*** is currently conducting a survey to find out how current residents access different services and amenities from their home, such as employment and job training, grocery stores, child care and other services. Your answers to this survey are extremely valuable and will help RCD better serve you and your neighbors and create better housing for all residents.

**This survey will take approximately 15 to 20 minutes to complete. All households that complete the survey will each receive a \$20 gift card (only one survey per household).**

**Households that complete a survey by JULY 31<sup>st</sup> will also be entered into a raffle to win an iPad mini.**

Answering these questions is completely up to you. You may refuse to answer any of the questions, and you may stop the survey at any time, however only completed surveys will receive a gift card. We recommend doing this survey as a family/household or having one person fill out the survey who can answer the questions for the entire unit.

All names provided will be kept private and will be separated from any of the responses you provide. Any facts that might identify you will not appear when we present this study or publish its results.

In addition to the survey, RCD is conducting interviews with residents based on their answers. If you are willing to speak to RCD further about your responses, please provide your contact information at the end of the survey. Households that are chosen to participate in the follow-up interview/conversation will receive an additional gift card.

Do you agree to take this voluntary survey?

- Yes, I consent to take this survey.
- No, I do not consent to take this survey.\*

\*If no, please return the blank survey in the envelope provided.

## Survey for [property name] Residents

\*RCD in partnership with the Association of Bay Area Governments (ABAG) will be conducting this survey on transportation and services for residents of affordable housing. The survey team will include a UC Berkeley Graduate Student and ABAG staff.

**Please tell us about you and the other people in your unit**

1. Please confirm that you live at [property name] by checking:  Yes or  No

**Unit Number:** \_\_\_\_\_

2. Who currently lives with you in the unit?

	Relationship to you (e.g. mother, son, roommate)	Age	Gender	Employed (Y/N)	Student (Y/N)	Retired (Y/N)	Other: (e.g. disability)
1	Self						
2							
3							
4							
5							
6							
7							
8							

3. When did you move into [property name]? Year: \_\_\_\_\_

4. Where did you live before? Please let us know by identifying the nearest intersection, city and state that you lived in before.

Street Address or Cross Streets:	How long did you live there?
City: _____ State (if not California): _____	<input type="radio"/> Less than 1 year <input type="radio"/> 1 year or longer

5. Do you or the people you live with have access to a motor vehicle (car, truck, motorcycle)? **[Check all that apply]**

- Yes. If yes,
  - How many motor vehicles does the household own? (Number: \_\_\_\_\_)
  - Where is (are) the vehicle(s) parked (check all that apply):
    - At the apartment property
    - On the street
    - Other \_\_\_\_\_
- No motor vehicle access
- Car share membership
- Other vehicle access (such as carpooling), please explain:

**Please tell us about your usual travel choices**

6. How often do you or the people you live with travel by? **[Check one for each method]**

	Almost Daily	Few times per week	Few times per month	Once per month	Rarely	Never
BART	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Car	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Walking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bike	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carpool	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. What are the **main** travel destinations for you the people you live with during a typical week (Monday-Sunday)? **[List each destination only once and no more than 6 destinations in total]**

Type of Destination: <small>(examples: Work; School; Daycare; Grocery Store; Library; Park; doctor; Church)</small>	Address , Cross Streets, or Neighborhood: <u>Please include city</u> <small>(example: Shattuck between Vine and Rose, Berkeley)* * Details will help us calculate distances traveled</small>	Who is going there? <small>(example: self and daughter)</small>	How do you/they usually get there? <small>(e.g. bike; walk + bus; drive + BART + walk)</small>	Days/Week or month <small>(e.g. 5 days per week; once a month)</small>	Does the time of day change how you get to this destination?
<i>example: Hospital</i>	<i>Grand and Broadway, Oakland</i>	<i>Self</i>	<i>BART + Walk</i>	<i>2 / week</i>	<i>At night I drive</i>
1.					
2.					
3.					
4.					
5.					

8. Since moving to [property name] do you and the people you live with: **[Check one]**
- Use public transportation **MORE** than we did before
  - Use public transportation **ABOUT THE SAME** as we did before
  - Use public transportation **LESS** than we did before

If your use of public transportation has changed, **please explain why:**

9. Since moving to [property name] do you and the people you live with: **[Check one]**
- Use a private vehicle **MORE** than we did before
  - Use a private vehicle **ABOUT THE SAME** as we did before
  - Use a private vehicle **LESS** than we did before

If your use of a car has changed, **please explain why:**

10. Do you or anyone you live with receive discounted transit passes or subsidized parking at home or work?
- Yes, \*please provide a description of the type of pass or parking arrangement in the box below
  - No
  - Other, please explain:

11. **Overall transportation costs** (e.g. the cost of driving, gas and public transit) for me and the people I live with have: **[Check one and explain in the box below]**
- INCREASED** since moving to [property name]
  - STAYED THE SAME** since moving to [property name]
  - DECREASED** since moving to [property name]

Please explain what has led to the changes (e.g. higher gas prices, use bus instead of car, live closer to job):

**Please tell us how your life has changed since moving to [property name]**

12. Since moving to [property name] have you or any of the people you live with changed where you/they go for any of the following services?

Destination	No Change	Change	Does not apply (N/A)	Details or Comment
School (K-12 or college)				
Employment Services & Training				
Groceries				
Medical Care				
Library				
Child Care				
Parks, Recreation and Open Space				
Entertainment (Theater, Cafes)				
Place of Worship				
Other: _____				

13. How does the location of [property name] compare with your previous home when traveling to the following services?

	Easier to reach	Harder to reach	About the same	N/A
Work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
School (K-12 or college)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employment Services & Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Groceries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Medical Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Library	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Child Care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parks, Recreation and Open Space	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Entertainment (Theater, Cafes)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Place of Worship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Comments (add any details on reasons for changes here):

14. Have you or any of the people you live with taken a **new** job since moving to [property name]?

- Yes, \*please provide the address or cross streets and city of previous job in the box below
- No
- Other, please explain:

15. Since moving to [property name] **finding a job** is now: **[Check one]**

- EASIER** than where I/we lived before
- NEITHER** easier nor harder to find a job than where I/we lived before
- HARDER** than where I/we lived before

Comments (add any details you choose here)

16. What are some advantages of moving to the [property name] neighborhood? **[Check all that apply]**

- Neighborhood is safer
- Neighborhood has better access to transit services, car-share or carpooling options
- Neighborhood has better access to shops, services and restaurants
- Neighborhood has better access to recreational opportunities
- Neighborhood has better quality of local schools

Other or Comments:

**The questions that follow give context to the results for all of the surveys. As in your earlier responses, all individual information will be kept confidential.**

17. Please list the occupation of **each household member** that is currently employed. If an individual holds more than one job, please list each job on a separate line.

Person	Part time / Full Time	Industry and Occupation (e.g. retail-sales person, construction - manager, etc.)	Comments (e.g. self-employed, disability leave)
Self			

18. Which race or ethnicity best describes you?

**[Check all that apply]**

- Asian/Pacific Islander
- Black/African-American
- White/Caucasian
- Latino/Hispanic
- Native American/Alaskan Native
- Other, please specify: \_\_\_\_\_
- Prefer not to answer

19. What languages are spoken at home?

**[Check all that apply]**

- English
- Spanish
- Tagalog (Filipino)
- Chinese, dialect: \_\_\_\_\_
- Arabic
- Other, please specify: \_\_\_\_\_

20. Please provide your name and contact information if you are willing to have an additional interview with us. Households selected for a follow up interview will receive an additional **\$20** gift card.

**Name:**

**Phone or e-mail:**

This concludes the survey. Your answers will help RCD provide better services and housing for all residents.

**Thank you for your time!**

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