



# Mobility Safety for California's Affordable Housing Residents: Co-locating Improvements

Kyler Blodgett

**Abstract:** California is rapidly building affordable housing, much of which is dedicated to specific populations like seniors, families, and formerly unhoused residents. However, these groups have unique mobility safety concerns as vulnerable road users and are often left out of current policies and funding programs that link housing and transportation. This research brief explores the gap in the literature and California's policy priorities related to residents' mobility and housing. It then analyzes data for Alameda County, finding that approximately 40% of government-funded affordable developments are within 100 ft of the pedestrian High Injury Network. It concludes with recommendations for municipalities and funding agencies wishing to better connect mobility safety improvements with anticipated affordable housing developments.

California has an immense shortfall of affordable housing and needs to build at least one million affordable units by 2031 to meet this need<sup>1</sup> (California Department of Housing and Community Development 2023). Momentum is building at the state level – California lawmakers passed several bills in 2023 to accelerate affordable production across California, including SB 423, an extension of a key 2017 law that reduces political and environmental review requirements (Baldassari 2024). The San Francisco Bay Area, in particular, stands to see an influx of projects if voters approve the \$10-20 billion Bay Area Housing Finance Authority bond in November 2024.

At the same time, California roadways have become increasingly dangerous for vulnerable road users (VRUs) in recent years, especially in large cities (California Department of Transportation 2023, pages 9 - 11). There were 3,795 VRU fatalities and serious injuries in 2015; by 2021 that figure had climbed steadily to 4,714. (ibid, page 13).



Arterial and collector roads that define heavy commercial and transit corridors are more likely to promote speeding and crash risk for pedestrians (Speck 2022). Unfortunately, affordable housing<sup>2</sup> is

<sup>1</sup> The 2023 - 2031 Regional Housing Needs Allocation found the need for 643,000 Very Low Income units, and 385,000 Low Income units, for a combined 1.028 million units. An additional ~1.5 million Moderate and Above Moderate Income units are required to meet the statewide need.

<sup>2</sup> California's Regional Housing Needs Designation defines Low Income households as 50-80% of Area Median Income, and Very Low Income households as 0-50% Area Median Income.

often built alongside these dangerous arterial and collector roads. The placement of affordable housing on less safe roads puts some of the residents at risk while accessing a fundamental need like housing. With high proportions of families and seniors moving into new affordable developments in infill areas (i.e., places that are already densely developed), there is a critical need to address these road users' unique safety needs. This research brief explores these connections and introduces solutions for policymakers and affordable housing funding administrators to get ahead of resident safety risks on the front end of accelerating housing production.

## BACKGROUND AND LITERATURE REVIEW

### California's Current Policy Landscape

The conceptual link between housing and transportation is not new. However, current California priorities for this overlap mostly focus on two issues as seen on the state's [Housing and Community Development \(HCD\)](#) landing page.

**1** California seeks to site new housing near transit, especially for low-income residents priced out of urban centers. By doing so, they aim to reduce commuter vehicle miles traveled (VMT) for climate purposes, which has proven a successful strategy if done at scale (Caltrans DRISI 2018).

**2** California policymakers argue that the cost of transportation should be factored into the calculation of housing affordability for a given location, which is not yet happening on a systematic level.

The Center for Neighborhood Technology has compiled a [Housing + Transportation Affordability Index](#), with fact sheets customizable by jurisdiction to begin illustrating these interrelated costs. In California municipalities such as Los Angeles, Sacramento, San Jose, and Redding, the household cost for transportation ranges from 50 to 90% of the cost of housing. This highlights the importance of transportation options and land use when thinking about affordability.

### The Gap

HCD's two priority issues are both important, but they do not address the critical question of whether California cities are co-locating housing developments with mobility safety upgrades to ensure that the new residents at a given site can navigate their neighborhood safely when walking, biking, or using a wheelchair. Only a small handful of studies have looked at this problem. Woo and Yu studied the relationship between tax-credit funded (Low Income Housing Tax Credit [LIHTC]) affordable housing and pedestrian-vehicle crash rates; they found factors that worsened pedestrian safety (high speeds, four-or-more leg intersections, traffic-generating land uses like commercial, dense urban housing, arterial line transit stops) and those that helped (single-family homes, connected sidewalks, lower speeds) (Woo and Yu 2017). The authors suggested that cities invest in intersection upgrades before developing multifamily housing at a given site to promote mobility safety of residents. Studying the risk of being involved in a traffic crash, for LIHTC residents, Houston et al. found higher exposure in transit corridors and mixed use areas and lower exposure in walkable low-income<sup>3</sup> neighborhoods (Houston et al. 2013). These findings suggest an innate connection between housing in dense infill environments - sites that score high in housing funding criteria because of access to transit, jobs, and other services - and heightened safety risk for residents walking, biking, and rolling.

### Unique active transportation needs for key resident populations

Because of state funding incentives and set-asides, many affordable developments target one of a few resident types: seniors, families (including children), and "Special Needs" residents with mental or cognitive disabilities. Each of these groups has unique mobility safety challenges.

Seniors tend to walk more for recreation than do other demographics, but also do so more slowly given increased reliance on mobility assistive devices like canes, walkers, and wheelchairs (Fraade-Blanar

<sup>3</sup> The authors quantitatively defined "walkability" as a composite of the neighborhood's [Walk Score](#) - based on proximity to neighborhood amenities - and the share of nearby intersections that are at least four-way, as a measure of street connectivity. "Poor" areas were defined as  $\geq 20\%$  living in poverty.

et al, 2022). This suggests the need for wide and well-maintained sidewalks as well as crosswalks with appropriate widths, resting spots, and timing to accommodate people moving more slowly. “Senior zones” also require maximum speed limits of 25 mph, largely determined by the presence of an official senior center, due to seniors’ increased bodily frailty being more of a vulnerability at higher driving speeds (Berkeley SafeTREC).

As non-drivers, children have unique mobility safety needs. Their dependence on walking, biking, or adults means that quality bike lanes and sidewalks are key, especially near schools (Vision Zero for Youth). Children being small reduces driver sightlines at intersections and crosswalks, making high visibility crosswalks, raised crosswalks, bulbouts, and daylighting<sup>4</sup> intersections essential. Best practices also include lowering speed limits and redesigning streets to induce slower driving speeds.

The final resident category of people with mental and/or cognitive disabilities is very broad and understudied as it relates to active transportation needs. Existing literature recommends ample sheltered places to stop and rest, tactile curb cuts and ramps, additional time to cross the street safely, and well-maintained clear sidewalks for low-vision people in particular (Hamraie 2020). More robust navigation and wayfinding measures can be particularly helpful for residents with cognitive disabilities (Levine and Karner 2023). The wide diversity within the disabled community suggests that many different types of safety and accessibility upgrades could help these individuals.

Based on income alone, affordable housing residents are likely to have different travel patterns from their middle and upper income counterparts. Low-income households with cars take nearly 15% more walking trips and 33% more cycling trips per week than higher-income households (Ghimire and Bardaka, 2023). These figures are even greater for households without a car, which many formerly unhoused residents, in particular, are likely to lack. Mobility on foot and/or bicycle is therefore likely an especially important factor in areas immediately surrounding affordable developments.

<sup>4</sup> With the passage of [AB 413](#), drivers will no longer be allowed to stop or park their vehicle within 20 feet of the crosswalk or 15 feet of the crosswalk where a curb extension is present. This law goes into effect January 1, 2025.

## Current Practice

Currently, most housing development projects incorporate mobility safety in one of a few ways:

- 1) Some projects are required to do an environmental impact report under the California Environmental Quality Act (CEQA), which requires a traffic impact study with details on the safety of pedestrians and bicyclists. However, most new 100% affordable housing in California is exempt from the CEQA process. Furthermore, [current law](#) is clear that these studies can optionally consider the safety of vulnerable road users, including people using personal assistive mobility devices and unhoused people, but do not have to.
- 2) Current planning code provides for certain street safety measures like minimum spacing, driveway placement, and curb cuts.
- 3) The jurisdiction may create a specific plan for the development to abide by, which includes enhanced mobility safety improvements.

There is a risk with CEQA-exempt projects that are located in jurisdictions without specific mobility safety plans. In these scenarios, projects may be approved without robust measures to ensure the neighborhood is safe for the influx of new, potentially vulnerable, residents.


## QUANTITATIVE CASE STUDY: ALAMEDA COUNTY


This research brief offers an introductory analysis of affordable housing siting in relation to dangerous roads for pedestrians. We conducted a correlation analysis between Alameda County’s pedestrian High Injury Network and affordable housing sites<sup>5</sup> as a springboard for future research. We focus on Alameda County in the San Francisco Bay Area given its size (1.63 million residents in 2024), their significant investments in affordable housing, the variety of urban centers, and unequal distribution of safe transportation infrastructure.


<sup>5</sup> Even though LIHTC-funded affordable housing can also include market rate (non-income-restricted) units, the common practice is to provide entirely or predominantly affordable units. In this Alameda County data set, 94% of LIHTC projects had more than 80% of units as income-restricted. Nearly 89% had 95% or more units as income-restricted. These developments are entirely or nearly-entirely dedicated to low-income residents.



The datasets used in the analysis include:

 Shapefiles of the **Alameda County High Injury Network (HIN)**, provided by the Alameda County Transportation Commission from 2012 - 2016. We focus on the pedestrian HIN since it encompasses the bicycle HIN, and almost all housing residents will be pedestrians but only some will ride bikes. Background on the county's HINs is available [here](#).

 **LIHTC-funded housing data** through February 2024, publicly available on the California Tax Credit Allocation Committee's (CTCAC) [website](#). LIHTC is a tax credit mechanism used to fund nearly all income-restricted housing across the country, so this dataset provides a reliable picture of affordable developments in the county. The first LIHTC-funded development in Alameda county opened in 1992, with 303 completed projects over 32 years. Number of units per development ranges from 14 to 840 (multiphase projects are reported as a single figure), with an average of 95 units. There are 36,521 total bedrooms across all developments, but no precise data around total occupants.

 Shapefiles of **Alameda County roadway classifications**, publicly available on the [Alameda County Open Data Hub](#). We filtered to the more than 10,700 roadways that are major or minor arterials or collectors, of nearly 85,000 total roadways in the county. These are not used in the primary analysis but users can turn these layers on and off within the interactive online map. They demonstrate that almost every street in the pedestrian HIN - apart from a handful in downtown Berkeley, Oakland, and Hayward - is an arterial or collector, reinforcing the link between street design and VRU safety.

Nearly 60% of all affordable housing in Alameda County is within 500 feet of a high-injury street and 40% of affordable housing is within 100 feet of one. These percentages are slightly higher for affordable housing dedicated to vulnerable residents, which is worrisome given the unique mobility needs of the populations served.

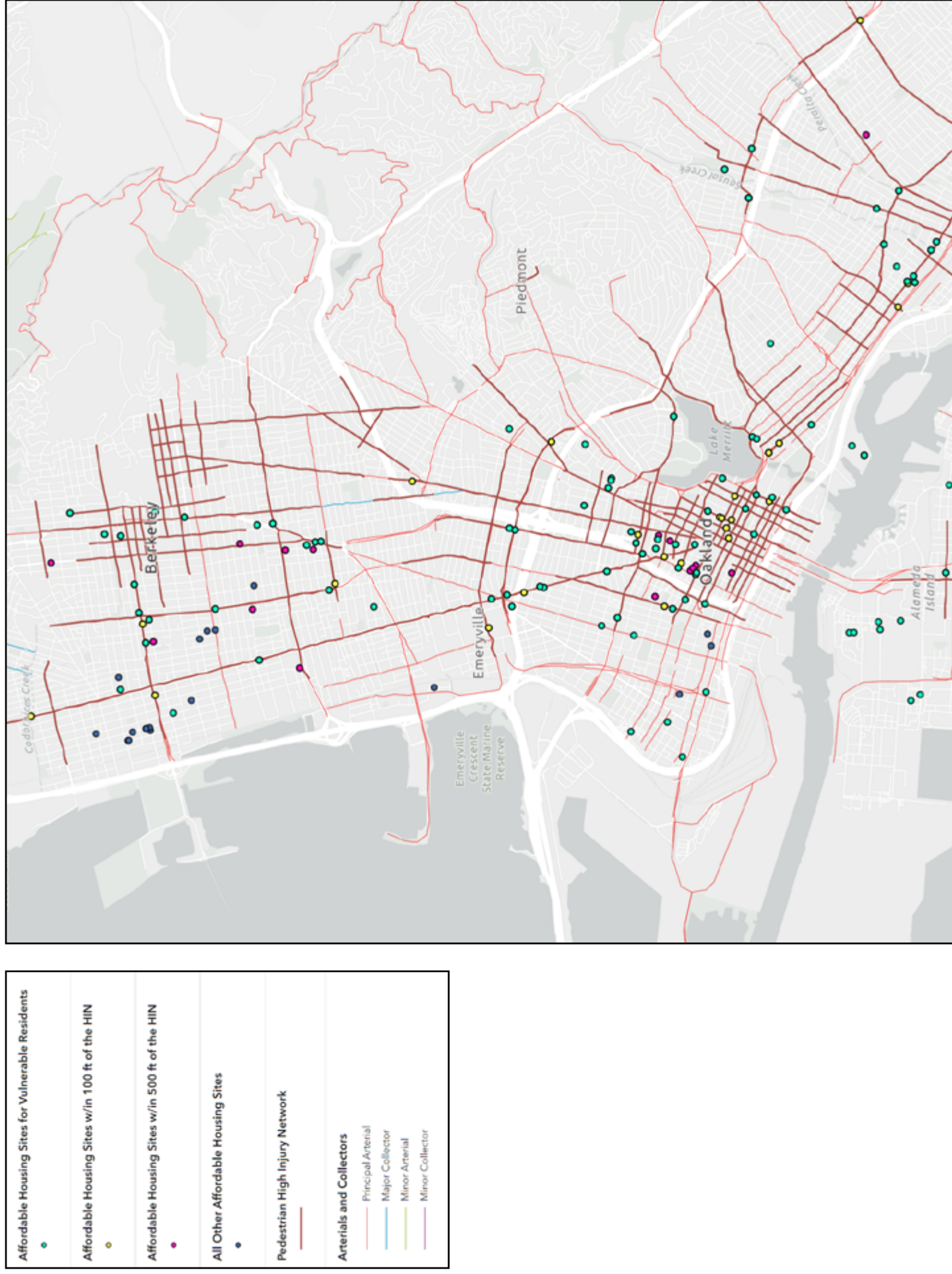
Figure 2 provides a visual snapshot of this concerning proximity across the county. LIHTC-funded housing sites are represented as dots, and the HIN is colored in red. The colocation is particularly noticeable along major HIN streets like San Pablo Ave in Oakland, University Ave, International Blvd / E 14th St / Mission Blvd, and Foothill Blvd. Users can explore this on their own in this [interactive web map](#). Clicking on a dot - one per housing development - reveals information about that development.

**Figure 1. Number of Affordable Housing Sites by proximity to the HIN (Alameda County)**

	Multifamily Housing Developments	Sites within 500 ft of the High Injury Network (% of total)	Sites within 100 ft of the High Injury Network (% of total)
All LIHTC-Funded Housing	<b>303</b>	<b>176 (58%)</b>	<b>119 (39%)</b>
LIHTC-Funded Housing for Vulnerable Residents	<b>200</b>	<b>118 (59%)</b>	<b>81 (41%)</b>

**Note:** "Vulnerable Residents" indicate housing specifically designated for Large Family (30% of units have 3+ bedrooms), Seniors (55+ or 62+ years old, depending on the category of senior community), or Special Needs residents (a state-defined category for residents with mental, physical, developmental disabilities, and/or at risk of homelessness), or some combination thereof.

Figure 2. Map of Affordable Housing Sites and HIN (Partial View of Alameda County)



What can cities and state agencies do to better link mobility safety improvements with anticipated affordable housing development? This section aims to serve as a launching point for future exploration.

## Strengthen Mobility Safety-Related Objective Design Standards

California recently passed a powerful set of laws that streamline the approval of affordable housing projects. Projects can waive the CEQA environmental review process, if they meet “objective design standards” plus other site and affordability conditions<sup>6</sup>. This removes the discretionary aspect from cities’ approval of housing projects if, for example, they are not in line with traits like “neighborhood character.” These bills force cities to regulate design objectively according to verifiable traits or measurements, though cities can still define their own objective standards<sup>7</sup>.

Despite being required by [California State Senate Bill 35](#) (2017) for multifamily residential development, the current status of cities enacting these standards is mixed. Several cities have approved and published their own objective design standards in late 2023, including [Concord](#), [Carlsbad](#), and [Mission Viejo](#)<sup>8</sup>. Others are actively in the process of establishing standards, like [Oakland](#). Some cities have developed these for certain key projects but not yet expanded them city-wide, such as the [North Berkeley BART Station Area](#) objective standards. Still other cities do not have online evidence of objective design standards, and current standards are fairly subjective with discretionary options.

Most objective standards address topics like building height, wall length, and open space that are not directly related to vulnerable road user safety. Among these, certain ones like sidewalk width, block length (to discourage long blocks that might encourage unsafe behaviors), and mid-block connections have more direct implications for resident mobility safety. Still, there are two problems. First, these safety-focused Objective Design Standards are only a small share of overall standards.

Second, they don’t fully capture other best practices around safety like redesigning intersections and crosswalks<sup>9</sup>.

Strengthening the mobility safety lens in objective design standards could do two things.

1. It could ensure that housing sites are developed according to mobility safety best practices.
2. If larger cities with staff capacity develop robust safety standards within their Objective Design Standards, these could be adapted by other jurisdictions that might not have the resources to do so themselves.

This opportunity begs the question: What minimum mobility safety improvements should all multifamily affordable housing developments in California incorporate within their Objective Design Standards?

The following introduces a set of resources for municipal Planning Commissions and Design Review Boards as they consider this area:

- The [California Safe Roads VRU Report](#) (pg 48 - 55) - highlights 32 VRU countermeasures with scorecards based on applicable road type, effectiveness at reducing several categories of dangerous behavior, and impact (cost and emergency vehicle access). Of the countermeasures, 21 are infrastructure-based and the other 11 relate to education and enforcement.
- This [Intersection Design Guide](#) draws on various resources to discuss bikeway facilities including protected intersections, signals, daylighting, and bike boulevard crossings (Alameda County Transportation Commission).
- The [Caltrans Pedestrian Safety Countermeasures Toolbox](#) - provides 47 safety measures to apply depending on the roadway context. Includes information on signals, signage, intersections, and various types of pedestrian crossings. Pages 18-19 indicate the improvements most useful for senior- and child-serving land uses, which is helpful for many affordable housing developments.

6 See [SB 423](#) in 2023 which renewed SB 35, and [AB 2011](#) in 2022 that enables streamlining for housing projects on commercially zoned sites.

7 The Housing and Community Development Department has a [resource](#) on enacting this new guidance.

8 The cities are examples of those that have formalized objective design standards and are not a comprehensive list of such cities.

9 These are some of the most important sites of conflict between motorists and vulnerable road users. Intersections alone account for 28% of VRU fatal collisions and serious injuries in California (California Department of Transportation 2023, pg 21).



- The [Caltrans Traffic Calming Measures](#) - a practical guide for transportation planners and engineers with dozens of roadway measures to slow traffic. It provides case studies and references to CA's Manual on Uniform Traffic Control Devices (MUTCD). Sections include signage, intersection treatments, vertical elements, roadway modifications, and more.
- The [NACTO Urban Bikeway Design Guide](#) - shares detailed information on signals, intersections, lane types, and designing for all ages and abilities.
- The [California Active Transportation Safety Information Pages](#) - a clearinghouse for online resources to promote safety for non-motorized road uses, including guides and toolkits for pedestrian and bicyclist projects.

Some common measures across these resources to consider for mobility safety residential Objective Safety Standards include: raised pedestrian islands, raised crosswalks, high visibility crosswalks, 20-foot daylighting at intersections, curb extensions, bike lanes through intersections, road diets / widened shoulders, and improved street lighting.

## Emphasize Vulnerable Road User Safety Improvements in AHSC Scoring, in addition to VMT

The state's largest funding source for affordable housing is the Affordable Housing and Sustainable Communities (AHSC) program which has \$757 million in funding that totals over \$3 billion after leveraging local, federal, and private dollars (California Strategic Growth Council 2023). The program focuses on building housing and developing neighborhoods with access to transit, jobs, green spaces, and walkability, while also funding accompanying improvements.

In AHSC's current scoring criteria for housing projects, only 11 of the 100 possible points directly relate to site-specific pedestrian and bicyclist improvements, with another 12 points tangentially related to improving mobility safety by reducing the need for driving (California Strategic Growth Council 2023, pages 31-35). The current 11 points are mostly about building bike lanes and sidewalks. While this infrastructure is important, as noted above it leaves out other best practices.

Increasing the proportion of points related to pedestrian and bicyclist safety would better center mobility safety as a key part of housing project selection, and would formalize an incentive for developers and city partners to build out safe mobility infrastructure.

## Connect Complete Streets Mandates with Affordable Housing Siting

Complete Streets is a national movement for street design that meets the needs of all users, regardless of ability or transportation mode. Cities are slowly shifting from complete streets policies - in which projects can optionally apply complete streets principles - to mandates, in which all transportation projects must be designed according to universal needs with minimal exceptions (Davis 2023). PeopleForBikes has compiled a useful [resource](#) with suggestions and case studies for complete streets mandates.

In California, a jurisdiction's Housing Element must now include locations for planned housing for the upcoming eight years. Municipalities could simultaneously prioritize these neighborhoods for complete streets upgrades to support mobility safety for residents. There are several funds particularly well-suited to these improvements. The statewide [Solutions for Congested Corridors Program](#) is a \$250 million annual fund aimed at reducing congestion by providing more safe transportation alternatives alongside general neighborhood enhancements. For state-owned streets, which are often higher-speed streets in mixed-use areas like San Pablo Ave in Alameda County, localities can use Caltrans' [State Highway Operation and Protection Program](#) (SHOPP) which focuses on repair, preservation, and safety improvements on state-owned roads. SHOPP has funded bicycle and pedestrian infrastructure, lighting improvements, ADA pedestrian infrastructure, and various other aligned projects. Specific to the San Francisco Bay Area, MTC's [One Bay Area Program](#) has approximately \$200 million annually for regional transportation projects that simultaneously advance land use and housing goals. Similar funds may exist through other metropolitan planning organizations. More general funding like the Active Transportation Program and Safe Streets and Roads for All continue to be excellent but very competitive funding opportunities for complete streets upgrades.

## CONCLUSION

This research brief explores affordable housing resident mobility safety, an understudied area of overlap between affordable housing and transportation in California. Several areas of future research will help to paint a better picture and inform practice at the local and state level. First, our analysis of Alameda County's proximity between affordable developments and the pedestrian High Injury Network was striking, but limited. Future research should study other geographies and other indicators of crash risk besides the High Injury Network, which is updated infrequently and does not account for near misses and unreported crashes. Second, the current literature is missing qualitative interviews with affordable housing residents about their transportation needs as active road users in their new neighborhoods. How do these residents express their road safety needs, and what improvements do they want? Finally, a key recommendation is to develop objective design standards centered on mobility safety within California's new housing streamlining approval processes. Many cities are in the process of creating these standards, so there is an opportunity

for the transportation safety industry to proactively identify best practices.

One potential risk of this work is it may slow the progress of housing production. Requiring these safety upgrades is crucial and may add to the long list of labor requirements, accessibility upgrades, preferences for very low income residents, environmental standards, and other interests that may slow affordable housing production and add to project cost. Additional design review and coordination takes time which costs the project money in interest. This connects to the inherent risk of affordable housing trying to be all things to all groups. Even so, this research brief has identified an opportunity to integrate safe mobility in all policies as well as a few non-traditional grant funding sources for site improvements that developers can leverage to better meet the safety and mobility needs of residents.

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## ABOUT THE PROGRAM

This research brief was developed as part of the Community Pedestrian and Bicycle Safety Program (CPBSP). The aim of the CPBSP is to reduce pedestrian and bicyclist fatalities and serious injuries in California. We partner with communities across California to discuss, plan, and implement safety improvements and projects. The CPBSP prioritizes working in communities that are at disproportionate risk for road traffic injuries and addressing the safety needs of people who are underserved by traditional transportation resources and planning. For more information, visit: <https://bit.ly/CPBSP> or email us at [safetrec@berkeley.edu](mailto:safetrec@berkeley.edu)

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Photo by Jacq Garcia (California Walks)

The Safe Transportation Research and Education Center (SafeTREC) is a University of California, Berkeley research center affiliated with the Institute of Transportation Studies and the School of Public Health. Our mission is to inform decision-making and empower communities to improve roadway safety for all. We envision a world with zero roadway fatalities or serious injuries and a culture that prioritizes safe mobility.

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