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## Infill Development: A Contested Solution to California's Crises

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Infill Development:  
A Contested Solution to California's Crises

An Honors Thesis

Presented to

The Faculty of the Department of Science, Technology, and Society

Colby College

In partial fulfillment of the requirements for the

Degree of Bachelor of Arts

By

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**Signature Page**

## **Abstract**

Infill development has become a contested term regarding California's perpetual housing crisis, the state's fight against the ever-important climate emergency, and its efforts toward improving large social injustices. To define the contested term, infill development is the development or redevelopment of land that has been underutilized, in terms of being overlooked, abandoned, or left vacant, compared to the parcels surrounding the property, both directly abutting and within the more general locality. Regarding this concept and its trending nature, state and local governmental agencies, residential real estate developers, researchers, activist groups, and residents have each created their own narratives, taking up strong pro- or anti-infill development stances. Some of these actors have proven infill to be a successful concept in some instances, but there are numerous barriers and outcome-related concerns that complicate the matter and often produce adverse effects. This thesis examines the actors, published literature, and outcomes pertaining to California's infill movement, on a state-wide scale before closely analyzing the San Francisco Bay Area. The processes and outcomes of infill development are inherently local and therefore much more nuanced than various actors proclaim them to be. Infill development is certainly not a panacea, nor is it an unjust and wholly adverse process. Thus, infill should be classified solely as another strategy of development that, when used properly, can be an effective tool in improving California's many critical situations.

Keywords: infill development, California, housing crisis, environmental crisis, social justice



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## 1. Introduction

Hotel California needs a renovation. In the public eye, California has maintained its image as a golden paradise. Regarding politics and economics, the state has been a longstanding leader. However, the state has many complex problems regarding housing that have only increased in size, particularly in recent years. Over the last several decades, many regional and state politicians, residential real estate corporations, and urban studies academics have created strong imaginaries and offered many solutions to improving California's currently critical housing conditions. One of the most prevalent solutions, infill development, is a highly debated concept, as actors from both sides have produced findings and formulated strong narratives in defense of their posture.

Whether it be introducing low-income housing in established areas with high public transportation, reducing vehicle miles traveled (VMT) and consequent greenhouse gasses (GHG), or counteracting the segregating effects of gentrification, strong data backs the proclaimed benefits of infill. Likewise, powerful entities support infill development, including highly cited researchers, governors and mayors, and multi-billion-dollar companies (Mawhorter, 2020; Shonkoff et al., 2011; Wheeler, 2009). Yet, the opposite camp lays claim to the many dangers of infill; urban studies-based publications from activists and scholars have shown that this same process often disproportionately places low-income residents and people of color in dangerous, polluted areas, has no positive environmental impacts, and only serves to increase local housing prices (Lin et al., 2017; Gabbe et al., 2021). These contrasting narratives create much conflict and debate, particularly with regard to profits, housing rights, and future development. Further, this conflict reveals that "infill" is not a steadfast term but a debated and contested imaginary with widespread impacts on California and its residents.

This thesis investigates the social construction and politics of “infill” regarding the material process of development. As a means of deconstructing this process, the surrounding discourse, narratives, and sociotechnical imaginaries produced as a byproduct of infill developments will be analyzed in great detail. The labeling of infill as either a panacea or a toxicant to California’s complex, interrelated issues of housing, environment, and social justice has resulted in inaccurate and broad understandings that disregard the variability of infill development regarding physical and inferred outcomes. Over time, dominant, public-facing actors, primarily the state government and corporations, have erased this locality and specificity via the creation of two polarized sociotechnical imaginaries. Likewise, other actors’ more-nuanced approaches have been flattened and downplayed. Though the sheer potentials of infill development concerning available land are immense, the framing of infill and the subsequent transactions between involved actors produce complicated outcomes.

First, I analyze state and commercial language promoting infill through a close reading of white papers, legislation/policy, and annual business reports. This reveals how actors mislead and persuade their audiences into taking up a one-sided stance that promotes infill development, primarily via desires for increased funding and modified legislation. I pair this examination with a discussion of the on-the-ground findings produced by researchers and activists to reveal how they encourage or fight back against the governmental and corporate narratives and findings. Then, via a case study of the San Francisco Bay Area, I examine how these discourses play out on the ground in particular ways that reveal the necessity of concentrated analysis. Finally, I offer an alternative approach to infill that promotes a more nuanced approach, as infill is inherently local and demands a circumstantiate analysis. This work shows the power widespread imaginaries can have regarding the alteration of the built environment, and it places into

consideration how such perceptions come to form and how they can be broken down and/or improved upon.

## **2. Overview**

### **2.1. Defining Infill and Its Potential**

Infill development, as this paper will define, is “the development or redevelopment of land that has been overlooked, abandoned, left vacant, or underutilized in comparison to the parcels surrounding the property, both directly abutting and within the more general locality.” First, this definition offers infill development as a rural and urban concept that can be performed on the smallest and largest scales. Second, forgoing any partisan implications, as well as any direct references to trends and potentials found in Figure 1, this definition acts as a more timeless concept that can be applied neutrally.

Regarding modern understandings, certain entities offer direct definitions of infill, but this clarity is anything but ubiquitous. For instance, the Governor’s Office website includes the statement, “Infill development is critical to accommodating growth and redesigning our cities to be environmentally and socially sustainable,” providing a description of infill’s uses but no real definition (“Infill Development”). This perspective on infill’s intended purposes is not found elsewhere, suggesting the office’s posturing. Regarding this unique characterization, the use of the word “cities,” suggests the location and availability of infill development are only found in urban/population-dense regions. This is a common misconception that limits infill opportunities to denser development zones, although infill can, and does, occur in rural regions. Due to this portrayal, the untouched, vacant, and underdeveloped parcels of Los Angeles, for instance, are quickly labeled as “infill properties.” These same parcels rarely receive this title in rural regions of California (Landis, 2006). Location matters in every aspect of real estate, and infill development is no exception. In many cases, previous and potential development, along with

other measures such as improvement-value-to-land-value, are disregarded as the geographic region is the only factor accounted for.

The defining and describing of infill is further complicated by the separation of urban, suburban, and rural, of which the lines of delineation are blurred. In an attempt to resolve these uncertainties and increase the awareness of infill in less population-dense regions, urban planner and chair of Regional Planning at the University of Pennsylvania John D. Landis “used detailed census data and digital maps from the California Farmland Mapping and Monitoring Project (CFMMP) to define three sets of boundaries for tabulating potential infill sites” (2006, p. 688). In this study, the largest, middle, and smallest infill counting areas were segregated based on gross residential density averages from regions set at 2000 census blocks. However, even Landis et al. could not entirely demarcate boundaries and were left with some crossover. This issue presents itself on a deep, fundamental level, for even the classifications of infill are improperly labeled by government entities, such as county tax assessors (Landis et al. 2006, 689). Nevertheless, though unsuccessful in offering strict bounds, Landis et al. better reallocated these mislabeled properties to improve the segregation of regions as a means of calculating the potential opportunities for infill development in California in a more inclusive manner.

To offer estimates of infill potential in California, one must include the parcels in regions of less population density—land that is often overlooked and labeled as outside of infill development, by the definition of the Governor’s Office, among others. This results in a vastly different conclusion than popular infill statistics, as the inclusion of rural properties results in an additional 200,000 acres of California property, and finalizing the number of parcels capable of receiving infill development in the state above 500,000 (Landis et al., 2006, p. 691). Roughly a quarter of infill-labeled land, by acreage, is classified as residential, most of which is specifically

designated for multifamily use. This large percentage of available residential property reveals the potential for affordable housing via infill, as the current state of affairs has underserved hundreds of thousands of potential residences. When choosing how to define infill development, the statistical variances, and consequent daunting and/or inspiring opportunities that accompany such a number, must be reckoned with. This can be further seen in the Landis et al. (2006) study, for the statistics provided do not account for many factors, including the property owner's willingness to develop or sell and the property's market status. This topic quickly becomes complicated and arduous, as infill opportunities are influenced by regional factors. Thus, to offer a definition of infill that denotes only urban construction or only reductions, for example, misses out on much of the concept. Consequently, it must be noted that despite such uncertainty regarding the term and the vast statistical implications this has, infill has remained a popular topic in residential development.

Even though the concept's popularity in literature is unwavering, the clarification of infill opportunities is necessary for beneficial discussion and research. Despite the lack of an agreed-upon definition, many hard-to-move actors have promoted infill or stood fast against its development. Much of this conflict and dissidence is likely due to such a lack of clarity. Without agreeing upon the meaning of infill and its physical form, further debate is futile. Before defining these camps and the data behind their claims, an infill definition must be set. Therefore, as previously mentioned, this paper uses a steadfast, broad definition that takes into consideration the many scholars and entities that have redefined the concept (Figure 1), adding and subtracting certain elements, while remaining neutral, encompassing, and concise.

**Figure 1*****Infill Definitions***

<i>Definition</i>	<i>Unique Element</i>	<i>Source</i>
“The development of unused or abandoned land in a built-up area, especially as part of smart growth. Often, adequate infrastructure is already present, reducing potential costs.”	Reduced costs	Miles et al.
“Building within unused and underutilized lands within existing development patterns, typically but not exclusively in urban areas. Infill development is critical to accommodating growth and redesigning our cities to be environmentally- and socially-sustainable.”	Growth, environment, and social sustainability	Governor's Office of Planning and Research
“Vacant or potentially re-developable parcels located within existing neighborhoods.”	Medium-density based	Landis et al.
“Infill development... is one of the central planning challenges in the decades ahead... It can reduce sprawl, preserve open space, revitalize downtowns and older neighborhoods, create more walkable, transit-oriented communities, improve jobs-housing imbalances, reduce infrastructure expenses, and provide residents with a greater variety of housing options. However, infill development is often extremely difficult due to a host of problems...”	Bilateral understanding	Wheeler
<p>“Infill site” means a site in an urbanized area that meets either of the following criteria:</p> <p>(a) The site has not been previously developed for urban uses and both of the following apply:</p> <p>(1) The site is immediately adjacent to parcels that are developed with qualified urban uses, or at least 75 percent of the perimeter of the site adjoins parcels that are developed with qualified urban uses, and the remaining 25 percent of the site adjoins parcels that have previously been developed for qualified urban uses.</p> <p>(2) No parcel within the site has been created within the past 10 years unless the parcel was created as a result of</p>	Nuanced/specific	SB-375 Transportation Planning



the plan of a redevelopment agency. (b) The site has been previously developed for qualified urban uses.”		
“Infill development promotes smaller, better designed homes. Building in established locations that are more accessible to jobs, public transportation options, and commercial activities has increased as many younger households show little interest in traditional housing subdivisions in more remote locations. Building in these more accessible locations is typically more expensive, so homes frequently are smaller and have more innovative designs. Residential architects feel that this trend will continue.”	Trending, difficult, beneficial	Lennar Research Center

*Note.* From *Real Estate Development: Principles and Process*, Miles et al., 2007; *Infill*

*Development*, Governor's Office of Planning and Research, 2022; “The Future of Infill Housing in California: Opportunities, Potential, and Feasibility,” Landis et al., 2006; “Infill Development in the San Francisco Bay Area,” Wheeler, 2001; *Sustainable Communities and Climate Protection Act of 2008*, 110th United States Congress, 2008; “The Coming Decade for Residential Design,” Lennar Research Center, 2016.

## **2.2. Housing Understood Through Science, Technology, & Society**

As an interdisciplinary field, STS is susceptible to critique. Marshall Sahlins accurately summarizes the general standpoint of this perspective, stating interdisciplinary studies are “the process by which the unknowns of one’s own subject are multiplied by the uncertainties of some other science” (Cronon, 2003, p. 17). Introducing multiple perspectives to the already numerous problems faced by the California housing sector may complicate the matter, reveal many uncertainties, and offer few steadfast solutions. Still, the many benefits found through this perspective outweigh any negatives. An interdisciplinary field is necessary to encompass the

many imaginaries in play and obtain a meta-analytical perspective of narrative and data. To compensate for the vastness of actors and problems surrounding infill development, an interdisciplinary study is fundamental, and the work of previous STS scholars provides a strong framework for understanding these problems.

Take, for instance, the labeling of housing as a technology and the consequent analysis that this connection exposes. Technology, defined as the purpose-driven application of and not the mere physical machine or equipment, encompasses housing development. To construct a residence, of which the practicality and purpose is shelter, one must apply obtained knowledge. STS, and its focus on what knowledge exists and how it has been obtained, is of particular interest regarding residential infill development for the purpose of infill as a concept is to solve a complicated issue in a practical and researched manner. Too often technologies, like infill, are taken as net positives. The new shiny object may be bigger, faster, and stronger, but is it necessary or beneficial? As it will come to be shown, the same applies to infill development and the new forms of living that accompany it; the reception and initial data often praise and over promotes the concept without taking into consideration the other, more nuanced effects.

Having defined housing, and specifically infill development, as a technology, one must recognize the relationship between technology and politics. As claimed by the political studies and STS professor, Landon Winner, in his seminal paper, “Do Artifacts Have Politics?” this connection is not only clear but inherent. “In our times, people are often willing to make drastic changes in the way they live to accord with technological innovation,” states Winner, “at the same time they would resist similar kinds of changes justified on political grounds” (1980, p. 135). Forty years after Winner published this paper, his claims have only been strengthened. While political developments are often feared or labeled as damaging, technological innovations

are deemed improvements and seen as net positive from the outset. As a technology, infill is no exception. Infill development, though rooted in politics, is frequently praised as a detached concept with straightforward outcomes and no political ties. Reports, as will later be shown, label infill as a solution to the housing shortage and encourage the placement of housing in areas that are highly polluted and unsafe, failing to acknowledge how this will impact the low-income residents they are often designated for (Lin, 2017, p. 79). Each actor, whether it be the state government or the next-door neighbor, has a solution to their own set of problems, and each actor overlooks fundamental details, for the field in which they act blinds their perspective. And thus, the political, and other, connections that will be revealed in this paper are frequently neglected.

A third, important STS concept that serves as a foundation for this thesis is the Actor-Network Theory (ANT). ANT proclaims everything exists on the same plane within evolving and shifting networks. As a consequence, all physical and nonphysical things, including objects, ideas, and processes are given equal weight. Consequently, ANT holds that social forces do not exist in themselves and strictly empirical analysis should be used to "describe" social activity instead of "explain" it. Although this theory is not cohesive, it introduces a conscious consideration of the overlooked factors and underlying assumptions involved in California residential development. Through this frame of understanding, it becomes clear what narratives have accumulated power, by what means power has been modified, and what movements and research are left out of the public's view. It is through ANT, and the STS-based concepts of technology and politics that make STS not only an important field but the proper field for dissecting California-based infill development.

## **2.3. Validating The Crises**

As has already been made clear, this paper asserts California is facing several interconnected crises. Though such crises have been labeled or disregarded and combined or isolated in several manners, this paper will categorize them into three groups: affordability, social, and environment. Areas of concern may fit into more than one of these labels, but they represent the largest divisions in concern regarding infill. It must also be noted that some elements of these categorized crises have been exaggerated and imagined largely by corporate or “mainstream” media through biased publications that disregard and skew relevant data. These misrepresentations, however, must be acknowledged, for a perceived problem results in reaction and change, regardless of actual existence.

### **2.3.1. Affordability**

Affordable housing in California is a complicated, major issue. Roughly one-third of Californians spend over 50% of their income on housing. Further, households classified as low income and very low income frequently spend more than half of their salary on housing when one incorporates housing-related costs (“Budget Summary”). In comparison, 30% of one’s income being devoted to housing, the norm in California, is the upper threshold for affordability according to the U.S. Department of Housing and Urban Development (“Rental Burdens”). Surpassing this threshold, as studies have shown, has many detrimental results including limited access to essential goods such as transportation, food, and healthcare (“Rental Burdens”). Some of the factors that have created this unhealthy climate are universal, such as the concept of NIMBY (Not In My Back-Yard), and recent high costs of construction, while others are more state-specific, like strict zoning regulations and land-use policies.

Another more state-specific component of this crisis is homelessness. Although this problem can be found in all major U.S. cities, California contains 160,000+ homeless individuals, a number only matched by combining the populations of the four next highest states (United States Interagency Council on Homelessness, 2020). While some causal factors are uncontrollable, such as year-round warm weather, many are governable, including the lack of affordable housing and the rising rental costs in comparison to more stagnant wages. As California continues to encounter high immigration levels of housed and unhoused individuals and as the tense housing climate continues to intensify across the state, housing affordability is a large, growing issue that must be addressed.

### **2.3.2. Social**

California's growing and stratifying population statistics also point towards infill's potential and demand regarding social inequalities. Although growth has slowed in recent decades, the state's current population consists of 40 million residents and has a 6.5% annual growth rate ("California: 2020", 2020). The 2020 Census also revealed that California's income inequality has greatly exceeded that of the nation, as the top family incomes are 12 times that of the families at the bottom, on average ("California: 2020", 2020). Regarding residential development, this is problematic because the average median cost of a home in California is two-and-a-half times that of the U.S. average. This expanding and stratifying population with high housing costs provides sufficient motivation for an increased focus on affordable housing in California.

Infill development is relevant to social justice issues in California due to its potential of reducing discrepancies in wealth amidst high costs of living. One area for potential improvement involves available land potentials. Of the many outcomes of the Covid-19 pandemic, California

has witnessed dramatic increases in online purchasing, widespread foreclosure of brick-and-mortar businesses, and mass patterns of relocation. This has left many non-residential buildings vacant. Despite these vacancies, alongside the general inefficiencies of land use found throughout California, no social benefits have been found. Infill has been labeled by many parties as an ideal, accommodating solution to this problem, as it presents large opportunities for more equitable housing with surrounding opportunities for their residents in these now-vacant locations.

### **2.3.3. Environment**

Infill development is also proposed as a means of reducing pollutants, most notably GHGs, and urban sprawl, or the spread of development in a manner that disregards appropriate urban planning. In California, infill can save up to 350,000 acres of natural land from future development (Landis, 2006, p. 708). As found in a 2000-2005 study by Thorne et al., infill "...is by far the most effective scenario at reducing sprawl," and that, "In all of the impact analyses, the Infill Scenario showed the least amount of overlap to sensitive areas, whether they be agricultural-, plant conservation-, or wildfire-related, in both acreage and number of households" (Thorne, 2017, p. 57). Thorne, who compared a number of California-based plans including those that were specifically designed to avoid sprawl and protect the environment, found that infill was the most effective. This is intuitive yet complex. The reallocation of land designated for resource protection found in "green" plans results in the encroachment of natural land and, in turn, damages to the environment. In contrast, the improvement or increased development of parcels already zoned for residential living found in infill plans is less intrusive.

In many ways, California is environmentally ahead of other states, but the state struggles with regard to VMT and consequent GHG production, as many Californians commute long

distances and encounter heavy traffic on a daily basis. To no surprise, infill development has been linked to decreases in GHG production. According to Williams, Kinney, Mawhorter, and others, this reduction comes primarily through the minimizing of transportation emissions as a result of increased walkability and decreased commute length. These studied effects have had real-world implications, as Bill SB 375, which will be discussed later, forces the Sustainable Communities Strategy department (SCS) to provide plans that, among other things, directly reduce GHG emissions via reducing vehicle miles traveled (Mawhorter, 2020, p. 3).

Yet, despite such strong findings, the environmental crisis is perhaps the hardest crisis to examine. Although the climate is certainly changing, connecting current housing development to such changes may be unfeasible. Consequently, this paper will cautiously take on a stance that does not label real estate development as an anti-ecological entity or as a climate-oriented process that deserves the titles of “green” or “eco-friendly.” Instead, the environmental crisis will be defined by the rapidly evolving laws and regulations that restrict and divert development processes, for these frameworks force residential development actors to evolve and comply. Regardless of measured climate variances, the policies and regulations that come from the perceived environmental crisis, such as the California Environmental Care Act (CEQA) and the more recent AB 1395, are highly impactful. If developers do not balance and adapt to the policy restrictions put in place, they cannot develop or engage in residential real estate without heavy penalties and detrimental consequences. When environmentally conscious forms of development are enforced by the state and local governments through incentives and policy changes, other entities involved must abide by or work around them. Regarding environmental policy, infill is often used as a solution by state and local governments in attempts to reduce the impacts of residential development on the surrounding environment.

Over the last several decades, environmental action on the national level has been sparse, leaving more local governments to take charge. California has not only accepted such a role but become a leader in terms of its climate policies in the United States and the world. This is, in part, due to the state's milder winters, high solar energy potentials, and other extensive forms of hydropower, geothermal, and wind resources (Wheeler, 2009, p. 126). On the other hand, California has faced its fair share of challenges, as the state is known for its lengthy, exhausting waterways and its automotive-oriented urban areas. Regardless, the state's policies and innovations in the environmental sphere are strong. Starting in the 1990s, California pioneered studies on GHG production, which led to committees and Senate Bills in the early 2000s, such as the International Council on Local Environmental Initiatives and SB 1771. Notably, Governor Schwarzenegger set emission reduction goals in 2005 that would dramatically lower GHG production to levels lower than those proposed in the Kyoto Protocol. As a result of this "backcasting," or the setting of a goal prior to the determination of necessary steps, California agents have been forced to innovate. One of these innovative approaches, as advertised by government associations and environmental organizations, is the promotion of infill development.



### **3. Infill as a Solution: Narratives, Findings, Actions**

With a proper understanding of infill development and its complications, the vast opportunities available in California for infill, and the three clear crises of scale, the attention of this thesis will now be directed towards the public narratives that encourage and defend infill and those that attempt to deter and prevent it. This chapter will focus on explicating the extant literature and most popular perspectives of the major actors in play: the state and local governments, the developers, and the affected Californians. The goal of this section is to provide an encompassing, critical analysis of primary source material. Critique will not be directed at pro-infill or anti-infill stances but instead towards literature that takes on an overly forceful and/or distorted narrative.

#### **3.1. Governments**

Governmental agencies have generally pushed for infill in strong and supportive manners—a position that is often undermined by residential real estate developers, researchers, and even other, typically smaller, political agencies. Funding has been made abundant, and new departments and associations have been created across California to allocate this funding, create new legislation, and aid developers by authorizing the bypass of old policy. But the understandings of infill are lacking in this sector. Infill development can preserve the environment and offer other benefits to the communities they are built in, but infill is not a concept that can be applied universally. It is not always beneficial and focusing primarily on the environment by way of “smart,” “green,” or “urban village” growth without consideration for specific qualities of each parcel capable of development is flawed and ineffective.

Unfortunately, the state and local governments have substantial control over the legalities and incentives of infill, and therefore they have a large say in what land does and does not

receive authorization for development. In 2019 a \$500 million grant was allotted for infill infrastructure development within the state's infill program. Residential developers have also been let off the hook regarding many development restrictions to aid infill development in such a highly regulated state. Likewise, specific counties and cities have created new infill-oriented measures. Los Angeles county produced "Program 5: Infill Sites Utilization Program" to promote infill in the county's urban regions, allocating "periodic funding of up to \$500,000" for "pre-development, construction, and permanent financing" ("Program 5"). The general encouragement and increased allocations towards infill amongst governmental agencies are primarily backed by the empirical data showing California is amidst a housing shortage that can be solved in congruence with environmental concerns through continued development. This is especially the case in Los Angeles and other high-demand, high-density regions.

The perspective of infill as an innocent solution is highly optimistic, as governmental agencies gloss over complications in favor of an erroneous, positive image. There is a widespread political push to create more "green" spaces through infill development, particularly in medium-density regions. These developments are littered across public-facing literature and praised for their supposed solving of complex problems. In particular, the "urban village" concept, characterized by strong public transportation, high public space, and consequent pedestrian encouragement within mixed-use and residential regions, has gained significant popularity (Gabbe et al., 2021). Urban villages, and related "smart growth" or "green" projects are often highly funded by governmental agencies (Miles et al., 2006). This funding is backed by scientific data but there appears to be a strong alternative motive: a positive public image.

Urban villages are used as "proof" of environmental progress by city and county governments. For example, the Santana Row urban village of San Jose was described by the City

Council as “A Vibrant Regional Entertainment, Retail and Employment Destination,” “A Center for Innovation, Creativity and Productivity,” and “An Interconnected Neighborhood with Great Urban Parks and Plazas” (City Council of San Jose, 2017, p. 15). In contrast, these urban villages are often cited as being inefficient and largely ineffective at reducing GHGs compared to other modern forms of development. Now, two decades after the praises of Santana Row were circulated and \$450 million was spent on development, the project has failed to improve development, per Santa Clara University professor, Michael Kevane, who conducted a study on urban villages in the region. Similarly, high construction costs, drawn-out processes, excessive rent prices, and alterations to community character have left residents upset and unsatisfied (Wang, 2019, p. 8). As Gabbe et al. state, “The estimated treatment effects [of the urban village initiative] are generally not distinguishable from zero across specifications that vary by parcel land use, treatment period, and identification strategy” (Gabbe et al. 2021, p. 1). The circumstances regarding urban villages and new urbanist development serve as an example of the optimistic and ignorant stance governments often take. Public appearance and perception are given priority over measured outcomes regarding housing and environmental concerns.

### **3.1.1. State**

Over the course of the last few decades, California governmental figures, including governors, secretaries of state, and superintendents, have pushed a narrative that defines infill as a solution to many of the state’s problems. At this high level of politics, the concept of infill is almost entirely described in a positive manner and is often labeled as a solution to many of the state’s problems. This can be seen through statewide bills that impact infill development both directly and indirectly. This is a troubling account, for there is accurate and reputable literature that offers a strong counter to this stance. Nevertheless, the state, as a powerful actor that

demands acknowledgment and mandates adherence in the dynamic residential industry, has done little to acknowledge this information.

The website of the Governor’s Office of Planning and Research provides a clear example of this one-sided perspective. Under the site’s “Land Use Resources” tab, there are six links: Military Affairs, Case Studies, Infill Development, Local Government, Renewable Energy, and Urban Forestry. Placing infill amongst such general topics of importance is unexpected and questionable. Even more questionable, however, are the benefits the website claims infill is said to do:

- Reduce greenhouse gas emissions and improve regional air quality by reducing the distance people need to travel
- Reduce conversion of agricultural land, sensitive habitat, and open space for new development
- Reduce costs to build and maintain expensive infrastructure
- Facilitate healthy and environmentally friendly active transportation
- Reduce storm-water runoff resulting in flooding and pollution of waterways
- Bring vibrancy, community, and social connection to neighborhoods (Governor’s Office of Planning and Research, 2022)

Directly below these links, the site reads, “OPR’s 1978 An Urban Strategy for California provides a framework for sustainable infill development” (“Infill Development”). A plan created nearly fifty years ago is still used by the state government to promote infill. Although the state attempts to take a broad perspective on infill, the state government's description of infill development as a panacea is based on inaccurate information. Consequently, the actions of the state are anything but in accordance with the overarching findings and opinions on the topic from

contemporary literature. As a result, the state is largely isolated regarding its widespread and steadfast defense and promotion of infill, as seen in its use of studies from the 1970s and more modern publications, such as SB 37, AB 857, and state-sponsored special reports.

The 2002 Senator Bill, “Transportation Planning: Travel Demand Models: Sustainable Communities Strategy: Environmental Review,” (SB 375) ties infill development to resolving the environmental goals of the state. With the aims of developing sustainable communities, reducing VMT, merging several planning agencies, and streamlining related processes, SB 375 has large impacts on housing planning and policy (Mawhorter, 2020, p. 5). Infill development is detailed as a clear appliance of these governmental aims, despite little government-based research available to back the position. That is not to say that there is not a substantial number of independent findings that have determined infill does reduce urban sprawl, decrease VMT, and create more just living situations (Mawhorter, 2020; Shonkoff et al., 2011; Thurston, 2017). However, these studies go uncited in governmental work, which not only neglects these supportive findings but disregards the significant body of works that have found infill development to have negligible and negative consequences.

More directly related to infill is AB 857, an advisory bill passed in 2019 titled “Infrastructure Planning: Priorities and Funding.” This bill states that California’s planning priorities are “intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety in the state, including in urban, suburban, and rural communities,” by way of promoting “infill development and... existing infrastructure that supports infill development” (107th United States Congress, 2001). AB 857 has made it necessary that, since 2002, the California state government must use infill strategies within its development processes. Once again, a universally pro-infill stance is taken by the state.

Another example of state-supported infill can be found in the state-sponsored special reports, where policy cohesion and calculated foresight regarding studied conclusions are disregarded concerning infill development. Proper foresight can be found throughout other fields, particularly within scholarly works, but rarely in governmental publications. For instance, in 2009, the Transportation Research Board published a Special Report claiming infill and other dense forms of residential construction are more environmentally beneficial while disregarding the physical requirements of such changes and future implications of related policy. The text reads,

“More compact, mixed-use development can produce reductions in energy consumption and CO<sub>2</sub> emissions both directly and indirectly. To the extent that more compact development reduces VMT, it will directly reduce fuel use and CO<sub>2</sub> emissions” (“Driving and the Built,” 2009).

However, deeper in the text one finds this reduction might only be as high as 5-12%, even when residential density is doubled (“Driving and the Built,” 2009). Doubling residential density would result in the collapse of many healthy regions, as long-standing infrastructure cannot support such dramatic increases.

Further, these findings are illogically presented, as forms of transportation—particularly public transit and electric car requirements—will continue to change the way Californians commute and travel. California policy has long promoted zero-emission vehicles (ZEVs) to reduce its disproportionately high VMT and GHG production. As early as 1990, California enforced ZEV regulations and goals. In 2012, just three years after this government-backed publication, an executive order established the goal of 1.5 million zero-emission vehicles (ZEVs) in California by 2025. More recently, the state published an executive order that will ban the sale

of all new vehicles that are not ZEVs beginning on January 1, 2035. If, as the Transportation Research Board suggested, California decided to double residential density for the sake of small reductions in VMT, this plan would likely net minimal, if not negative, gains in environmental benefit, for ZEVs have far outpaced development and are far superior in reducing GHG, the main concern of VMT.

Over the course of the last few decades, California governmental figures, including governors, secretaries of state, and superintendents, among others, have pushed a narrative that defines infill solely as a solution to many of the state's problems, with a particular focus on environmental concerns. As history has shown, this public-facing literature is inaccurate and partisan. Projects such as San Jose's Santana Row arise out of these extensive bills, and the funding and associations they create, only to encounter years of contestation and diminished benefits. Certainly, beneficial communities have arisen out of these infill development strategies as well, as the state government has proven, but it is the lack of recognition failed projects receive that makes the state-wide government agencies disconcertingly inaccurate.

### **3.1.2. Local**

Fortunately, the state government is not nearly as influential as county governments are, for within the general jurisdiction of the state the local entities have had sufficient capacity to impose their own legalities regarding infill development. As many scholars, such as Gabbe et al., point out, statewide policies and studies should not be used to reach any specific conclusions or promote more regional actions (Gabbe et al., 2021). Given current conditions, local entities must be open to acting incongruently and antithetical to state mandates, although determining what local action to take is no easy feat for smaller governmental bodies. Each county, city, and/or

town has its own unique set of challenges, even amongst the widespread policies of the Governor's Office of Planning and Research, SB 375, and AB 857.

Though the conditions of San Francisco will be greatly detailed in the subsequent chapter, a brief overview of San Francisco's current housing and environmental circumstances can provide insight into the complexity of local government issues. At a press conference in the summer of 2019, San Francisco Mayor London Breed rhetorically asked, "Why does it take so damn long to get housing built?" (McQuillan, 2020). Ironically, Breed should understand this problem, for she worked for the city's Redevelopment Agency Commission that oversaw large design and development projects for six years (2004-2010). Instead of attacking the problem head-on by increasing the availability of multi-family properties and decreasing living costs to allow the development sphere breathing room to increase operations, Breed directed a vast majority of the hundreds of millions of dollars towards homelessness aid services and lining the pockets of wealthy public servants (Knight, 2020). To fund this effort, the city accumulated capital through steadily increasing property taxes. The city also enacted a state of crisis to bypass laws as a means of combating housing-related issues more efficiently. These efforts were directed towards homeless-related services, not housing or development (McQuillan, 2020). This action failed to improve or even impede homeless problems in the Bay Area and led to increased costs of living. As San Francisco natives are pushed out of the city due to housing costs, in part due to large waves of gentrification, little action has occurred on the local government level to directly combat this problem.

Infill is much more complicated and many-sided than the state makes it out to be, but that does not mean it is a problem strictly for county governments. With their own set of problems and challenges, these entities often miss the point when it comes to improving housing



conditions and combating the state-wide crises in their city or region. Fortunately, local entities have not promoted infill development as an entirely beneficial concept, unlike the state, but it is often labeled as an overly complicated concept that requires great turmoil to resolve. Breed is certainly not the only mayor misinformed and misdirected regarding her city's infill potential, as local governments must operate within statewide policies and in congruence with other actors, such as regional developers.

### **3.2. Developers**

Though one may claim the hand of California government, both on the state and local scale, pushes the actions of development companies, political powers are seen through a different lens in the residential development industry. Laws are followed, but not in the same manner that everyday Americans follow them. Taxes are pushed down the road, troublesome neighbors are paid off, and the word of the government is never final. Similarly, one might also suggest that the hand of client demands pull developers, but this is not as clear-cut in California. Demand, statewide, is not sufficient but copious. This is especially the case in urban and coastal regions, although even in inland and “undesirable” regions demand is disproportionately high compared to U.S. averages. Such statistics have only grown following the rural migration pattern sparked by the Covid-19 pandemic.

As a result of these consistent asymmetries, the developers and owners of California residential properties have vast amounts of freedom and power. Consequently, the developer’s public stances towards infill are largely negative, even when the government offers heavy incentives, for only the most profitable projects are undertaken, and infill development is often costly, complex, and slow. In a paper on sustainable and affordable development, professor of housing Sarah Mawhorter states “Land for infill projects is usually high-priced and complicated

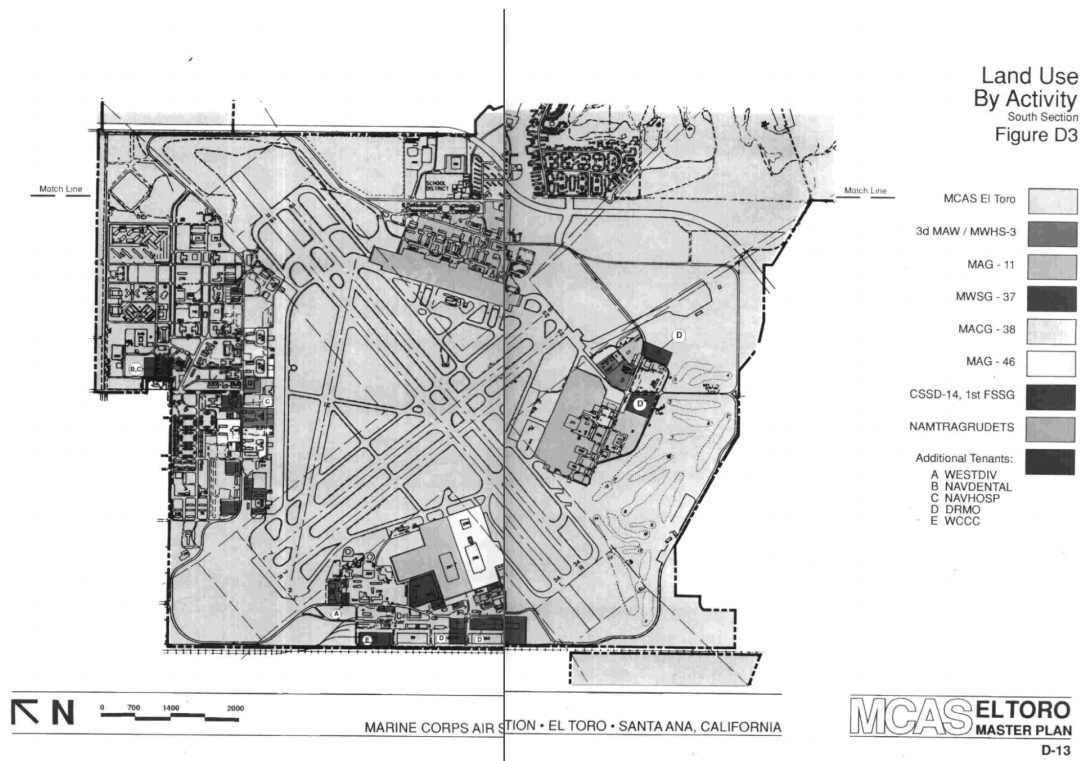
to acquire... [as] infill sites are generally constrained by past uses and surrounding development, infill projects need custom design and construction solutions and neighbors often oppose new construction, leading to costly delays or even rejection of projects (Mawhorter et al., 2020, p. 4). That is not to say infill projects do not take place and produce great profits, but in the eyes of residential developers, such opportunities are less desirable and harder to come by in comparison to non-infill parcels. Especially in comparison to the perspective of state and local government agencies, residential developers are much less keen to partake in residential developments. Fortunately, this stance is not swayed solely in a direction worthy of being labeled as pro- or anti-infill, as is the case with the California state government, but a general sense of hesitancy and lack of interest in infill is common for development agencies.

An example of an infill development worth hesitancy and serious consideration is the military air station turned multi-use park currently spearheaded by FivePoint, a publicly traded company, in Irvine, California (see Figures 1 and 2). This project reveals the feasibility, high desirability, and profitability of infill, as well as its many beneficial outcomes, alongside the many troubles that infill projects uniquely encounter. As seen on the outskirts of Figure 2, the prior base was surrounded by agriculture, a golf course, and residential communities. Thus, what makes the development of this land relevant is the infill that has taken place since, making this case a strong example of an extensive infill project with large impacts on surrounding parcels. The project, now popularly known as the OC Great Park, is currently home to many commercial features, including over sixty sports venues, an arts complex, and the park's signature attraction, an orange balloon ride, with many developments still in the planning phase. This park, which the LA Times referred to as the "second-coming of New York's Central Park," is no small feat (Brazil, 2021).

Regarding residential development, FivePoint has built 6,200 homes, including 720 affordable housing units, and has plans to build another ~4,000 homes (Murar, 2021). According to FivePoint's website, this infill project will "seamlessly [integrate] market-rate and affordable homes, schools, sports, wellness and healthcare, offices, entertainment, transportation, trails, and open space within close proximity to each other" ("Communities," n.d.). With such large, beneficial plans, this project might stand in line with the sentiments of the state government. However, the development, despite its beneficial plans of recreation, education, and housing, faced resistance from local actors.

**Figure 2**

***OC Great Park/Marine Corps Air Station El Toro (c. 1991)***



Note. From *Master Plan of the Year 1991*, Marine Corps Air Station El Toro, 1991.

**Figure 3*****A Working Draft of OC Great Park/Marine Corps Air Station El Toro (2019)***

*Note.* From Great Park Neighbors, City of Irvine, 2019.

Since the park's first rezoning/replanning, of which the plot would encounter many, conflict has been a consistent factor. To begin, the OC Great Park was previously the Marine Corps Air Station El Toro, until 1999 when the land was redesignated by the city as a nature reserve and multi-use development. This was a dramatic move that would have impacts throughout nearby communities and all of Orange County, giving cause to local apprehensiveness and opposition. Those opposing the OC Great Park's development created a substantial battle "between pro-airport and anti-airport groups [that] dominated Orange County politics" throughout the 1990s and 2000s (Brazil, 2021). Following this line of conflict, the infill project was complicated by a change of ownership. FivePoint was not the original developer of the Great Park. Prior to the allocation of land to FivePoint by the City of Irvine, Lennar, one of

the largest home construction companies in the United States, failed to meet multiple project deadlines and requirements amidst the 2008 housing crisis. The FivePoint approval marked another modification to the redevelopment of the then-labeled “Not So Great Park,” which had many of its original plans altered as the land was auctioned off (Pierceall, 2014).

While FivePoint has remained successful in its development projects, the park has remained in the political spotlight. Notably, in 2012 an audit of the Great Park was debated among city council members and Mayor Steven Choi. Consequent turmoil arose as accounting firms had been hired and fired without public explanation. When all was said and done, the accounting firm of Hagen Streiff Newton & Oshiro that was responsible for the fraudulent audit received over \$500,000 in fines and lost its professional license for engaging in “numerous acts of negligence” and disseminating “false and misleading information” (Robinson, 2020). Lennar, FivePoint, and the local government have faced their ups and downs involving the park and the infill development they opted to undertake. In short, with vast potential profits amidst heavy speculation and controversy, following the proper path has clearly been a difficult task.

Despite these challenges, the developers still reign over other involved actors, even in the case of the OC Great Park. In 2017, less than a decade after its 2008 troubles, Lennar generated 12.65 billion USD in revenue. Lennar currently has countless communities, both completed and under construction, in Los Angeles, San Diego, Sacramento, Orange County, and around California. Similarly, FivePoint has projects in Los Angeles and the famous Candlestick Park of San Francisco. Both companies remain successful with a generally bright, positive public image. Further, the state has continued to show them support by way of the many policy loopholes and benefits provided to them and other developers who take on infill development.

The OC Great Park serves as an example of infill potential as well as a textbook case of the potential dangers that might arise with infill development. The timeline and data this case has produced also serve to back the stance of most developers in California, who are less prone to take infill projects due to the costs and complexities that accompany such action. Even amidst strong funding (and fraud) from state and local governments, developers are likely to face complications due to costs and challenges from other local entities, an inherent aspect of infill that may slow or even prevent favorable and profitable development.

### **3.3. Academics**

Although most researchers and scholars are a step removed from development and do not take any direct actions, the production of research and findings has a great influence on the narratives of politicians, residential real estate developers, and California residents. This influence is important, as a recognizable movement is currently occurring among academics. Infill development research, which witnesses a strong growth beginning two to three decades ago, has been somewhat constant in its pro-infill findings. This area of research, which defines and discusses the housing, social, and environmental crises, has only continued to grow. However, within the last decade, the previously determined, consistent benefits of infill development are being refuted (Calavita & Mallach, 2010; Chew & Flegal, 2020; Gabbe et al. 2020; Lin et al., 2017). Researchers have begun to warn of inaccurate data used previously by the state government to back their support of infill as a widespread solution. This increase in evidence refuting infill has increased conflict, as many of those in favor of infill have continued to promote it as a promising solution, despite such accusations.

Of the long-standing California pro-infill camp, Thorne and Wheeler are prominent, highly referenced scholars. Thorne et al. (2012) reviewed six different models for combatting

urban growth in California from 2000 to 2050. The paper ultimately finds that infill development, accompanied by goals of nature preservation, is the most direct and successful approach to combating climate change. Likewise, Thorne (2017) compares climate-neutral and climate-adaptive scenarios of urbanization and models five growth scenarios, finding that infill preserved ~50% more land for other uses than the alternative models.

Wheeler, who published papers on infill development as early as 2001, has remained a popular scholar of California policy and planning concerning development, housing, and climate policy. In the early 2000s, Wheeler highlighted the contrast between the popular advocacy of infill in comparison to the lack of real-world changes. Through fieldwork, interviews, and secondary sources Wheeler was one of the first to highlight the unique challenges infill faced in California and offer a series of steps to overcoming such challenges. On the local level, specific plans needed revision and alteration, while on the more regional level funding must be allocated and distributed effectively. As for the state, the tax structure and grant system needed small reworkings. But all this, according to Wheeler, was feasible and needed, for infill held “enormous possibilities” in the Bay Area and around California (Wheeler, 2001, p. 26).

In the anti-infill genre, researchers Gabbe et al. (2021), and Landis et al. (2006) have raised several red flags. Gabbe et al.’s “The Effects of an “Urban Village” Planning and Zoning Strategy in San Jose, California,” finds that high-density development, including infill, does not have a significant impact on GHG pollution reduction, nor does it make housing cheaper (Gabbe et al., 2021, p. 2). As the paper states, “Political leaders and ordinary residents of San Jose, as in other cities, believe that the housing crisis in growing metropolitan areas necessitates significant changes in the set of policies that shape the extent and nature of the private and public provision of housing... The first contribution of this paper is to present empirical estimates of the impact

that suggest that urban villages did not lead to significantly more development in the eight years following the adoption of the strategy” (Gabbe et al., 2021, p. 16). The primary means of creating urban village spaces is through upzoning, the process by which infill development can occur due to zoning code modifications that loosen density and building requirements within built environments.

Likewise, the work of Landis et al. (2006) defines potential problems infill development in California is susceptible to, marking one of the earliest publications in the anti-infill findings now much more prevalently published. Landis et al., whom this paper has referenced with infills immense potentials in California, refutes the more optimistic futures by offering several likely futures; many parcels upon which successful infill opportunities can be found are possessed by landowners unwilling to partake in further development, development is disincentivized by very high construction costs that make financial feasibility roughly 25% of all infill parcels, and only 9% of infill parcels are capable of residential development under current strict policy regulations and other environmental or physical constraints (Landis et al., 2006, pp. 717-718).

Whether positive or negative in their conclusions, it is fair to label academics as largely unbiased regarding infill development in California. If these actors are guilty of anything, it might be their susceptibility to trends, but this might be a byproduct of more developed and funded research unfolding over an extended period. As a critical force with influence, researchers must make accurate conclusions. This appears to have been true thus far, although many popular publications, including those detailed above, are hesitant to make claims of absolute understanding. More research is required, for governments are in constant tension with developers regarding potential outcomes, while activists and residents share actual, felt outcomes, all of which play into the net benefits of infill.



### 3.4. Activists

Unlike governmental agencies and academics, infill advocates are somewhat hard to come by on the activist level. As to define and differentiate this subset of actors, this paper will loosely define activists as housing rights organizations with active and clear presence and stance regarding infill development and the social, affordable, and environmental impacts of housing in California. This broad description is primarily due to the lack of activists and movements that reference infill by name and directly promote/discourage it, which greatly contrasts with the vast number of housing activist organizations found across the state. However, a term must be set, for although every California resident has an opinion on infill, typically one of central NIMBY or YIMBY, every resident cannot be taken into consideration, as this group is too large in size. As will be detailed in the case study, these residents have important opinions and substantial influence, but these qualities only become apparent on the local level, where smaller voices can be heard.

Though activists are uncommon, they do exist. One group, Housing California, works to "prevent and end homelessness and increase the variety and supply of safe, stable, accessible and permanently affordable homes" (Ramirez, 2021). Similarly, Housing NOW! California aims to make housing more affordable and reduce the displacement of lower-class communities. Another organization, Housing is a Human Right, focuses on "protecting tenants, preserving communities and producing housing" (Ramirez, 2021). The list goes on. While these activist organizations, who stand for ethical, affordable, and accessible housing, often highlight infill development as a potential solution despite its many troubling consequences, their focus does not lie solely on infill development. The general focus of these activists is placed on emphasizing broader and more fundamental issues.

Of the small number of activists that focus directly on infill, most are directly opposed to it. Of all actors involved, these parties offer one of the most valid counters to infill; when developed without consideration for the project's residents, infill can have detrimental impacts, including health and safety concerns. Infill advocates from all other fields have highlighted the benefits of infill when placed in and around thriving, built environments (Shonkoff et al., 2011; Thorne et al., 2017; Wheeler, 2009). Access to nodes of established public transportation, hospitals, grocery stores, and job opportunities are all potential qualities infill development can uniquely solve. As a result, low-income housing, which provides the most benefit to its residents when placed in these key regions, is tied to infill. Yet, these projects are often placed in dangerous regions.

As environmental geographer Laura Pulido reveals in “Rethinking Environmental Racism” white mobility and urban/suburb dynamics have played a crucial role in environmental racism. The spatiality of environmentally hazardous producing elements disproportionately affects minority races and low-income Californians. Through a case study of Los Angeles, Pulido details the migration of white residents away from industrial, unhealthy regions and into certain suburbs, while non-white residents witness, powerlessly, the moderation of health codes and the introduction of additional environmental hazards (Pulido, 2000). With infill, when designated as low-income, these properties are often placed in these unhealthy regions as a result of environmental racism.

This matter is further troubled by works promoting infill in industrial regions. For instance, Thurston, in “Here Comes the Sun” (2017), claims infill is a solution to the housing crisis, suggesting that current buildings, including churches, semi-vacant homes, and malls can be transformed into housing. Although the redevelopment of this vacant land appears logical

with high potentials, the land is often categorized as non-residential for health and safety reasons, a concern multiplied by previous construction processes and uses that were not beholden to residential regulations (Thurston, 2017). Fortunately, some scholars have spearheaded an activist movement in favor of Pulido's findings. Shonkoff et al. (2011) provide a strong literature review on these findings that conclude housing disproportionately impacts specific, vulnerable groups, primarily non-white and low-income. More recently, Garzón et al. (2014) finds that new low-income housing is still being built near sources of pollution, such as freeways, rail yards, and distribution centers, despite the conclusions of Shonkoff et al. and Pulido.

The work of these researchers has strong ties to activist organizations. The Ditching Dirty Diesel Collaborative (DDD) of San Francisco worked with researchers and public health officials to reduce the exposure of new infill development residents to pollutants due to the strong empirical research determined by Garzón et al. (2014). Likewise, the previously mentioned activist groups who prioritize housing in a more general sense often cite Lin et al. (2017), who detail the racial injustice crisis and urban displacement taking place in Oakland, and more generally in California, for the human displacement crisis is directly tied to the housing crisis (Lin et al., 2017). This interconnection of activists and researchers accentuates the strength of this anti-infill development from the social justice perspective. However, such negative qualities must not annul the benefits of infill development when utilized properly. If infill development is focused on increasing housing access and affordability it can have many great benefits, but actors involved must be wary that affordable housing is ethically built in healthy, safe regions.

## **4. Case Study: Infill in the San Francisco Bay Area**

### **4.1. Introduction**

The San Francisco Bay Area has empty lots and low-density land designations, despite having a population nearing 8,000,000 residents, and another 1,000,000 expected in the next decade. As a progressive region facing many of the typical issues found across California, the Bay Area serves as a strong background upon which pro-infill development actors have garnered support. Highly funded governmental agencies, action-oriented developers, and environmentally conscious residents are abundant in the region. However, infill is a complex subject with many controversial components that create numerous contradictions and conflicts. Why has the San Francisco Bay Area, a region that appears set up for success via infill development, not broken through these barriers of conflict?

Despite the astronomical demand for housing in the Bay Area, the large regions of land capable of infill development, and the local actors' emphasis on housing as a means of improving the region, there are specific impediments that have greatly hindered infill development. This impediment, however, is sometimes for the better and sometimes for the worse. As a consequence of the high potentials and desires, coupled with numerous hurdles that produce good and bad outcomes, the region can serve as a strong example of the broader implications infill development faces throughout California.

Through this case study, an understanding of infill development is found that extends beyond the general conclusion labeling infill as complicated on the regional scale. The actors of the San Francisco Bay Area vary in interpretation, engagement, and reaction regarding infill development. Therefore, placing the nexus of interactions on a level playing field via ANT

appears a logical solution to ensuring all voices are heard concerning each specific case of development.

## **4.2. Community and Residential Interactions**

### **4.2.1. Systemic Issues**

The San Francisco Bay Area has experienced high levels of immigration and emigration in recent years, of which large portions are long-standing locals, ethnic minorities, and low-income residents. Varying levels of unemployment, public education, crime, and taxation influence these patterns. Acting as push and pull factors, they encourage the emigration of one population while fostering the immigration of another. Consequently, populations are rapidly altered. In particular, San Francisco is a city of great history and diversity, although large-scale structures that foster troubling futures, including the maintenance of oppressive forces, are currently in play. Residents often point out these troubling forces, but they do little to disrupt their movements. Even when residents voice opinions, a lack of power hampers their attempts of altering large-scale action, investment, and policy.

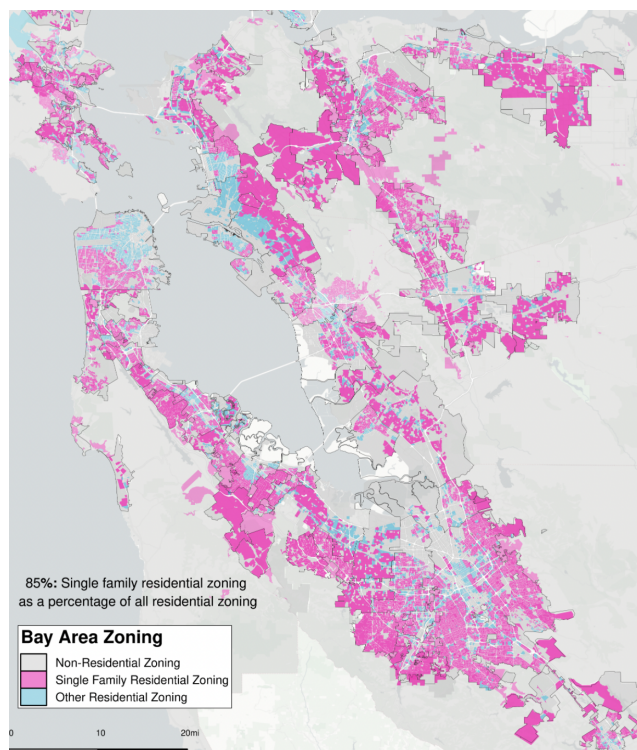
### **4.2.2. Gentrification**

Infill development can serve as a haven for low-income residents in times of high displacement due to gentrification, a large problem in the Bay Area. As the region remains a trending, popular place for some of the wealthiest American citizens and companies, specifically in the tech industry, the displacement of low- and middle-income residents is significant. Residents have spoken up and demanded more equitable living conditions via modifying zoning requirements. As seen in Figure 4, this is a sensible move, for non-single family residence zones, and consequent affordable living spaces, are sparse throughout the region. However, as new

projects arise, residential developers continue to construct properties that bring in upper-level sale and rental rates matched only by the high-level demand of wealthy residents and newcomers. Once again, the voices of residents appear futile, for even when affordable housing policies have been modified, usually via the setting of a non-affordable to affordable housing ratio, little change has occurred (Wheeler, 2009). Further, introducing policies that directly contrast the desires of developers and large-scale associations requires high levels of time, effort, and capital. In this instance, the low-income residents, who are most affected, directly lack such entities. Therefore, the problem rests on a lack of communication and understanding between residents and the government, a lack of interest from developers, and a lack of support from the upper classes of the Bay Area.

**Figure 4**

***Zoning Laws of San Francisco Bay Area***



*Note.* This figure highlights the insufficient land designated as non-single family residential. Such a designation enables increased density via multi-family housing (townhomes, duplexes, and other attached homes). This reveals the vast potential for infill development within established, single-family zones. Additionally, the intermix of non-residential zoning, specifically on the San Francisco Peninsula, with residential zoning offers strong infill potentials that utilize available land with nearby resources (job opportunities, transportation, health services, etc.). From *Single-Family Zoning in the San Francisco Bay Area*, Menendian et al., 2020.

#### **4.2.3. NIMBY, and YIMBY**

Bay Area communities also deter infill developments, as many residents are opposed to all forms of development, and especially low-income development, as the common acronym NIMBY (Not In My BackYard) defines. Despite support for environmental movements and the unhoused, community members often present the biggest opposition to development projects. Having worked at development firms in Southern California, I have first-hand experience regarding these issues. Due to loud construction projects that last multiple years and developments that block views and crowd roads, many people go to great lengths to prevent infill projects in their community. From attending town meetings and reaching out to local politicians to making life difficult for development by way of court cases and other legal (or illegal) means, the voices and actions of nearby residents can greatly hinder development.

I worked for a property management company that was developing a 30-acre parcel upon which, among other things, a condominium complex would be built parallel to a long-standing neighborhood of tract, single-family homes. In an ongoing attempt to please those living directly

opposing the company's property, the Project Manager and I reached out and spoke with the residents, which included an initial group meeting held prior to breaking ground. Despite these actions, one individual attempted to sue the company before our higher-ups closed the matter outside of court. However, only a few weeks later that same figure filed a complaint with the city over noise ordinance violations. When this matter was resolved, the individual then began sabotaging development processes, including pulling marking flags, of which he was caught on camera for doing so. This example, though a specific anecdote, perfectly details the lengths NIMBY neighbors are willing to go to prevent infill. Due to just one individual, governmental policies and permits can be dragged out for months and result in unexpected delays easily costing developers tens of thousands of dollars.

That is not to say, however, that infill projects are not supported in the Bay Area. In StreetsBlogSF, an online news source that aims to unite residents in the fight toward safe, livable, and sustainable communities, resident Jonah Mann details the excitement he has towards an infill development in his community (Figure 5). In April of 2021, Mann wrote, "Because housing is a basic human right, our city's policies should have the explicit goal of making it both abundant and inexpensive" (Mann, 2021). Mann goes on to explain that many Bay Area locals are happy to see infill development, for they have seen the many downsides of gentrification, underutilized land, and vacant or unbuilt residential units. As a direct example of YIMBY (Yes, In My BackYard), Mann concludes his blog by stating,

"For those properties that do turn over, the assessed tax rate will reset to the current market price, allowing the city to collect more revenue to fund services like schools, affordable housing programs, and transit. The project at my own corner provides a beautiful case study. There will soon be three more families that can walk to our local businesses. I'm excited to



welcome my new neighbors, and for this sort of infill to be replicated on every lot across the city” (Mann, 2021).

Unlike state-wide government agencies that make wide-sweeping changes, regional governments can listen to individual members of their county and/or city and witness the movements they create. Despite powerful actors and a certain percentage of Mann’s neighbors countering his perspective, his voice can result in changes to attention, action, and policy. Balancing NIMBY and YIMBY voices is challenging but manageable, for differing perspectives demand recognition on the individual level.

**Figure 5**

***San Francisco Infill Project***



*Note.* Image courtesy of Jonah Mann via “Op-ed: Build Infill Housing and Welcome New Neighbors to San Francisco,” 2021.

The unique challenges of infill demand specificity. Even in the context of Mann’s neighborhood and the infill project he publicly supports, there was a significant amount of

controversy. The development faced backlash, as it purchased the parcel from a bicycle shop that brought value and character to the neighborhood, neither of which were recreated by the three units priced at the highest prices the market could handle. Further, Mann's NIMBY-oriented neighbors can be found in the comment section below his post, where a couple of rebuttals are posted (Mann, 2021). This work and its subsequent conversations serve to benefit the perspective of the community and city governments, for these individual opinions are muted and lost otherwise. Developers, governments, associations, and even other residents can hear these perspectives via op-eds and other forms of local discussion. Mann's post is encouraging, for through increased communication the opinions of all actors, even those who are not given sufficient power and say, can help highlight where infill developments will be most beneficial and desired.

### **4.3. Government Interactions**

#### **4.3.1. Money and Obligations**

The San Francisco government has dramatically increased its home-oriented funding through the allocation of capital and increased taxation, but little progress has been made. As the Office of the Mayor posted in February of 2022, the city of San Francisco has received over \$200 million in funding from the California Department of Housing and Community Development (Office of the Mayor, 2022). This immense sum, according to Mayor Breed, will build 400+ affordable housing units across four projects (Office of the Mayor, 2022). In line with this move, the Bay Area Economic Institute reported in 2016 that the completion of major developments is the most effective way to increase affordability in the city (The San Francisco Planning Department, 2018, p. 4). Unfortunately, this is one of the few moves the San Francisco Government is making toward effectively resolving its ongoing crises.

Of the nine other significant courses of action concluded by the Bay Area Economic Institute, none are being successfully pursued by the San Francisco government. The majority of these forms of resolution involve the streamlining of processes, the relaxing of restrictive codes, and the introducing of new codes. Regarding the current situation, regional governments continue to foster complex systems that slow and prevent infill development, even in regions where many actors have come forward in favor of infill. For example, the Marine Corps Air Station El Toro/OC Great Park infill development is mirrored in the redevelopment of the Bay Area's Alameda Naval Air Station. Similarly, the project's development was highly debated. Yet, in direct contrast, the City of Alameda took a stance opposing the construction of affordable housing. Further, despite multiple straightforward, affordable housing proposals from developers, the city attempted to prevent affordable housing units from being built and attempted to destroy the 500+ housing units already built on the parcel (Wheeler, 2001). Although the existing housing units remained due to other actors taking legal action against the city, this instance serves to highlight Bay Area governments taking on a NIMBY stance and opposing housing, affordable housing, and infill development, despite dramatic increases in funding for these exact processes.

One factor encouraging NIMBY sentiments within local governments is their obligation to constituents. Residents of the Bay Area have been quick to voice complaints to their prospective governments due to negative sentiments towards minorities and low-income residents, opposition to change, and unrealistic fears (Wheeler, 2001). As a result, despite readily available land capable of infill development, politicians and developers predominately encourage development outside of their governed district(s). Resolving this issue is complicated. Some suggest educating and incentivizing officials to recognize the importance of diversity and

equality. This ignores the underlying problem of public disinterest (Reid et al., 2017).

Regardless, Bay Area governments must walk a fine line.

A better approach to garnering support must involve communication between county or city governments and their residents. County, city, town, and neighborhood associations must contribute to the development processes and discussions, for more removed governments face widespread resistance—a cost of labeling infill as an absolute good despite diffuse disinterest. Currently, this intricate process is overlooked and largely nonexistent. Government workers, typically responsible to the county or city, interact with developers to ensure ordinances and building codes are upheld, but nowhere in this process is anything more than a signature asked of residents. Housing, and especially affordable housing, must be built in California, but placing new residents in healthy communities that will benefit from infill is a prerequisite of this development.

#### **4.4. Developers Interactions**

##### **4.4.1. Financial Discouragement**

Developers aim to reduce risks and increase profits. Fundamentally, developers serve to benefit the governments and the residents of the communities in which they operate, as their success depends on the interactions and reactions of such actors. This simple equation is complicated in California, and especially the Bay Area, with layers of additional legislation, risks, and costs. Many of these extra steps are unique to infill development. Under modern tax regulations, affordable housing and infill are discouraged due to supplementary burdens. Consequently, infill development is undesirable due to a lack of potential revenue in comparison to other, higher-yielding development forms (The San Francisco Planning Department, 2018). Developers look to the county governments and local loopholes as a means of avoiding the

state-induced limitations, yet the Bay Area governments have predominantly added to the challenges. However, even amidst academic evidence encouraging the removal of governmental regulation, developers have continued to pursue opportunities, as demand continues to skyrocket. Governmental agencies have used this development to back their stance, despite the current costs of construction resulting almost entirely in high-end housing, affordable to only a small percentage of residents.

Another aspect of financial discouragement developers face when taking up infill projects is the cost of production. In California, land, and other critical resources such as lumber, have dramatically risen in price. Prior to the Covid-19 impacts, developers in the Bay Area faced challenges hiring contractors and obtaining reasonable bids. These issues have become debilitating due to the impacts of work restrictions and other supply chain issues. How much government intervention and limitation played in these increased costs and economic troubles is a highly debated topic, but the lack of support found on the local level, despite immense allocations of funding, is disconcerting. Even when affordable housing and infill projects are shown to be beneficial on the regional level in the Bay Area, the financial barriers to development are stifling.

#### **4.4.2. Litigation & Red Tape**

Beyond a lack of support via financial aid, regional governments of the Bay Area enforce stricter policies than the state mandates, resulting in “red tape,” or excessive obligations placed upon businesses. Though this issue originates from the political sphere, it intertwines with the social acceptance of litigation. Once-popular statements such as “If you build it, they will come,” have been transformed into comical remarks like, “If you build it, they will sue.” Though fears of a “litigation society” appear overhyped according to research, litigation is an expected hindrance

that Bay Area developers must plan for and overcome (Rosen & Sullivan, 2014). Policies in California aid the complainant, as developers can be sued for up to 10 years post-construction, a length not found in other industries. This challenge is one of many forms of risk and red tape, as other codes and permit requirements greatly restrict and challenge infill development:

- Prolonged permitting processes. Permitting delays are not only common but inevitable. While public voices can be avoided, ignored, and even paid off, all roads of development go through the government, creating bottlenecks due to inefficient processes and lacking approval agencies. Yet Bay Area governments have not improved this process in recent years through new technologies and increased attention, as other regions have done. Instead, the process has been prolonged via the introduction of several institutions that developers must gain approval from.
- Strict building codes. There are national, state, and local standards that must be met by developers. Infill and affordable housing both face additional, specific limits. These codes, and the larger zoning requirements, are strict, rigid, and unforgiving in the Bay Area, whereas other cities have reevaluated and loosened building codes to support infill development. For instance, five-story multi-family developments are limited in height to 2-3 stories across large portions of the Bay Area. Developers have attempted to build this traditional form of multi-family complex on top of one- and two-story parking garages, but city and county institutions have set the precedent that the parking floors contribute to the floor limit (Galassini, 2014). Other regions, even those that do not have strict regulations regarding vehicle parking, have recognized the benefits of this creative solution and approved of the developments.

- Street parking. Parking is strongly tied to development and infill projects. Although this issue may seem insignificant to an outsider, street parking availability can often cost developers tens if not hundreds of thousands of dollars and is required by code (Wheeler, 2001). Code requirements vary across the Bay Area, and while the average limit is low, some projects require 2.5 spaces per unit, which can prevent a developer from even considering an infill project.

#### **4.5. Alternative Interactions: Infill Through Other Means**

The obstacles to traditional infill development in the Bay area are numerous and difficult to overcome. For the residents, the large issues of systemic injustice, gentrification, and NIMBY sentiments are at play, even among desires for development and community support. For the government, there are financial disincentives and a consequent dragging of feet that occurs, despite increased funding and governmental figures demanding publicly for improvements to the housing market. And for the developers, codes, restrictions, potential litigation, and other factors deter investment and action. With so many deterrents to infill, the lack of support for infill in and around San Francisco should be pervasive. This, however, is not the case, as many actors still look to infill enthusiastically due to means of alternative development. To further emphasize this community enthusiasm, and progress, a broader conception of infill is required. New housing trends provide light at the end of the tunnel for many who desire infill development where it is beneficial. However, these housing trends and their loose version of infill lack a narrative and consequently receive little recognition, despite their proven success and large potential in the region.

As previously noted, definitions of infill vary greatly. Although they all encompass the general concept, the definitions listed in Figure 1 are essentially skewed interpretations. To

reiterate, some claim infill must occur in “built-up area[s],” while others refute this entirely. Likewise, the “Real Estate Development: Principles and Process” textbook educates its readers that infill typically involves smart growth and lower potential costs, both ideas that have been countered by developers and researchers (Gabbe et al., 2021). Along these lines, the size of infill development is often assumed to be substantial and solely enacted by established developers and related contracted companies. In contrast, infill can also be found on much smaller scales. Multi-million-dollar projects with tens if not hundreds of units are more likely to produce dramatic change, either positive or negative, but it is possible that through many small and independent actors, California’s large-scale problems can be resolved via infill development methods currently not found in prominent literature.

#### **4.5.1. Real Estate “Rookies”**

Awkwardly placed in between full-scale companies/developers and residents, there is a growing population taking residential real estate actions on an individual level. These real estate “rookies” break the high level of entry that has historically gatekept the lucrative residential real estate industry. Such rookies often develop on the smallest of scales, owning just a few small properties to begin with, and typically partake in these endeavors as a form of sideline career. Though many begin with the intent of making modest profits, this so-called side hustle has the potential to quickly turn into primary income, high investments, and many infill-based developments.

A primary cause of this spread has been due to social media. Concepts such as “househacking” and “BRRRR” (pronounced “brr”) are advertised on these platforms as easy points of access for the average American to take part in the highly coveted real estate industry. For instance, BiggerPockets, a multimedia company based on real estate education, creates social



media material, in the form of podcasts, webinars, blogs, and books on the topic. They even connect local individuals looking to take part in development and redevelopment for discussions on education and work opportunities. The company's most popular podcast, "BiggerPockets Real Estate Podcast", consistently hosts amateur guests who have only recently started purchasing properties, redeveloping them, and then reselling or renting them. Previous scholarly work has ignored the growth of this community and labeled it as strictly in the personal finance sphere, even though many of these rookies are adding a substantial number of new residents to their communities.

To confirm this connection, a few examples can be given. Househacking, a standard concept amongst these "rookies," involves the division/sectioning-off of one's primary or secondary residence to add additional renters and produce income. This process often requires the minimal redevelopment in the form of additional internal/external walls and modifications to HVAC, plumbing, and electric systems. This is not a negative trait, however, as househacking can easily and quickly create new living spaces suitable for medium- to low-income individuals. Similarly, BRRRR, which stands for "Buy, Rehab, Rent, Refinance, Repeat," has become a popular concept of business in this social media sphere. In short, the BRRRR process acts as a shortcut to capitalization on properties by bypassing the high level of income typically needed to enter the position. With infill, the BRRR process, in particular the rehab and rent aspects, result in the redevelopment of typically dilapidated housing that is then rented to families or multiple residents for a price typically below market averages. In the Bay Area, and across the US, these processes have resulted in infill developments that have been historically overlooked and/or disregarded by larger corporations.

#### 4.5.2. Tiny Homes & Minimal Living

The reduction of one's footprint via the concepts of minimal and "tiny home" living has also become popular in modern culture. Despite the lack of definition and measure regarding these concepts, they have several proven benefits. For instance, the general classification of a "tiny home" is anything <400 sq ft, whereas anything <1000 sq ft appears acceptable but not as genuine. Those who promote and narrativize this movement cite studies that conclude increased housing availability, less environmental impact, and more affordable living are all benefits driving this trend (Evans, 2018). Although untraditional, the style of living has impressive statistics; 1) cheaper construction costs, 2) lower rent prices 3) reduced urban sprawl, 4) decreased energy inefficiencies, 5) improved community relations (Gauer 2004, Duff 2012, Anson 2014, as cited in Evans, 2018; Shearer et al., 2018).

Unlike the social media trends promoted by BiggerPockets, among others, that only produce affordable housing as a secondary byproduct, minimal and tiny housing has been labeled as a solution to all three of the major crises California is facing. Reducing one's footprint via limiting additional living spaces not only better preserves the environment but allows for more dense formats of affordable, ethical living. Although these constructions and their impressive benefits mirror the proclaimed benefits of infill, the connection between the two concepts has not to be substantiated. To highlight this inadequate affiliation, we can return to the Jonah Mann example once again. The three-story, three-unit multi-family structure built in 2021 could have contained 6 units. Each 1000+ sqft apartment, which targeted wealthy buyers, could be turned into more affordable ~500 sqft "tiny" apartments. This change would have increased housing availability and reduced the cost of living for each apartment, variations that would please Mann's pessimistic, or perhaps realistic, neighbors.

As a counter to this alternative narrative, some highlight the odd, unique position tiny/minimal homes prevail in, as they straddle some of the wealthiest and the poorest residents. One can contrast the in-vogue \$1+ m. minimal homes made of high-end materials by leading architects and designers with the rudimentary tiny homes planned to aid the homeless populations of the Bay Area. Regarding the prior point, the YouTube channel, “NEVER TOO SMALL,” has over two million subscribers and consistently garners millions of views in its coverage of modern, expensive tiny homes. In contrast, scholars and developers have published works emphasizing the cheap construction costs coupled with the high number of units the format can introduce into the Bay Area (Shearer et al., 2018). Tiny housing, though popular amongst wealthy clients, has large potential when it comes to infill development, a narrative that has gained some momentum in the Bay Area but made little traction, as recent concepts such as the shipping container home is impractical (Shearer et al., 2018). Alternative, small-scale living can result in great progress, a potential backed by recent studies, but the current narrative surrounding tiny living is lacking and poorly framed.

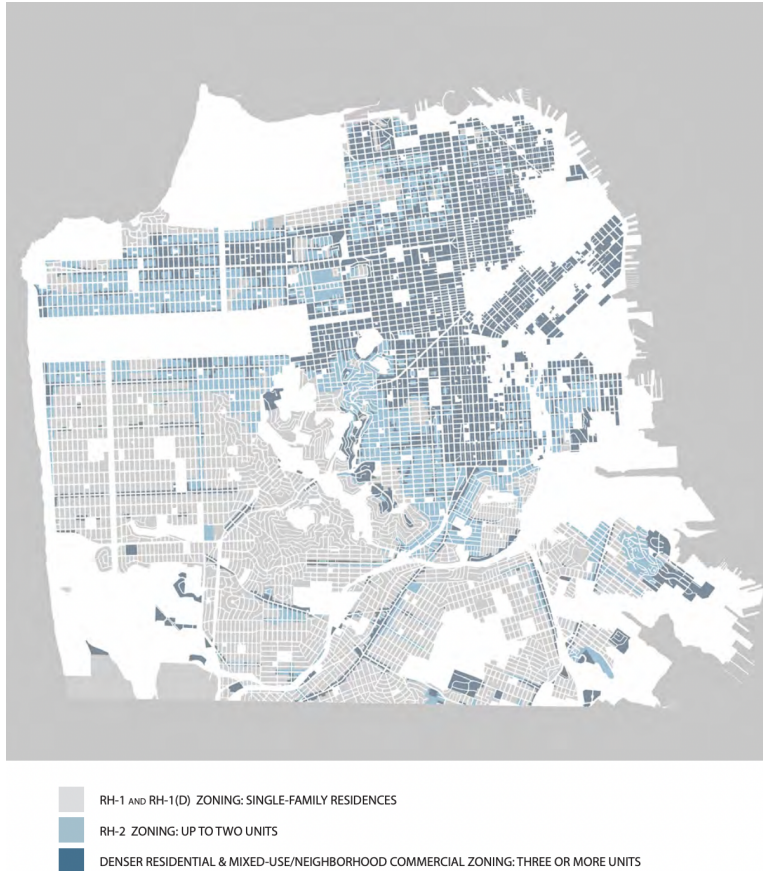
#### **4.5.3. Additional Dwelling Units**

Another growing form of small-scale development is the construction of additional dwelling units (ADUs). ADUs can be described as secondary housing units built primarily on parcels designated for single-family residences, which are abundant even in the dense city of San Francisco (Figure 6). According to Porch.com, ADUs are growing at a rate of 9% annually in the United States, which equates to ~100,000 ADUs constructed every year (Porch Research, 2021). Properties with ADUs or the space for these units have become increasingly popular, as homes with ADUs currently sell approximately 35% higher than their non-ADU counterparts (Porch Research, 2021). This development is similar to that of the househacking strategy in that it

occurs on the smallest of scales while still being capable of offering new living quarters in long established and developed regions of the Bay Area.

**Figure 6**

***Single-Family Homes Zoning***



*Note.* The map depicts potential under current zoning for ADUs. From “sf-ADU” The San Francisco Planning Department

The ADU movement, coined by Kol Peterson as the “Backyard Revolution,” often evades and works around governmental regulation. Researchers in 2013 found a large number of ADUs built in the Bay Area were lacking proper permitting (Brinig & Garnett). It should be

noted, however, that California has authorized 11 times as many ADU permits in just a three-year period (2016 vs. 2019) than other states. Likewise, the San Francisco government continues to aid ADU production and permitting. For many Bay Area residents, affording rising housing and living costs is only possible through sideline incomes, including the rent produced via ADU rentals (Galassini, 2014). However, there is some controversy regarding governmental support, as wealthier populations have used loopholes within lenient ADU laws to gain permitting for mega mansions and oversized houses (Galassini, 2014). Regardless, the residents' push for additional units offers many great benefits for housing equality and affordability in the region. As with the other noted trends, the direct impact of these projects is small in comparison to the great potential of large-scale, traditional developers, but the collective, individual actions are resolving issues for those who take part, and this, in turn, has impacted government policy and altered the processes of urban growth.

#### **4.6. Conclusion of Case Study**

The San Francisco Bay Area serves as an insightful microcosm of the large-scale issues California is currently facing. With respect to housing, the region is one of the most troubled and damaged. However, The Bay Area is also a driving force of change. Due to the high availability of land because of vacancies, under-use, and unbefitting zone and code regulations, infill development appears capable of dramatically improving its affordable, social, and environmental concerns through residential development measures. With a large population that continues to rapidly grow, as well as one of the highest costs of living in the country, changes are not only desired but crucial. Even so, infill development is a complicated task that demands case-by-case analysis. Despite sharp demands, heavy funding, and a government actively looking to combat gentrification, reduce GHGs, and, most notably, resolve its immense affordable housing issue,

infill has not been widely successful. This reveals the complexity and nuance of infill development; it is not entirely good or entirely bad, nor is it easy or hard to implement across the state. One must support infill development only where it is necessary and useful, and avoid unnecessary challenges, when possible, even if that includes partaking in development on a small scale through alternative means.

For the community, systematically oppressive forces, gentrification, and NIMBY-related issues result in strong opposition. For the government, politicians and political figures face public dissatisfaction alongside financial incentives. Likewise, developers and related businesses are deterred from infill projects due to the red tape that stands in the way of efficient and profitable development and the litigation and risk that accompany it. Hurdles must be lowered or removed to allow infill development to take place in its most effective and useful places, but one should not interpret any abatement of laws and regulations as a promotion of universal, abundant infill development, for it can have large, negative consequences. As seen thus far, infill development is desired in the Bay Area, but the imprecise policies have made it a troubling concept; when action primarily occurs within governmental loopholes via non-traditional means, there is reason to question the factors limiting traditional growth.

As this paper presents, resolving the multiple crises at hand even without widespread policy changes is possible. If the large-scale actors will not take direct action or encounter too many obstacles that slow down their actions, smaller actors will, for they can take in local factors and act with targeted force. By defining infill development in a more liberal-minded manner, the movements of small-scale development, tiny/minimal living, and additional dwelling unit construction become apparent. These trends prove that infill can occur and make progress in San Francisco. Introducing additional rooms and ADUs to a previously developed neighborhood

increases lower-income housing availability. Living a more simple, minimal life can reduce urban footprint and sprawl while placing residents closer to work opportunities, schools, and essential goods. Redeveloping rundown housing for personal wealth incentivizes reducing underutilized and underdeveloped land.

Yet widespread changes yield widespread results. If the San Francisco Bay Area and California are to resolve their crises of scale, all actors must cooperate. Instead of allocating large amounts of funding and attention to enforcing universalizing policies that aim to fill every parcel capable of (re)development, attention must be placed on local interpretations, engagements, and interactions with imagined infill sites.

## 5. Conclusion

Having provided a review of the literature, action, and overall narrativization performed by actors engaged with California-based infill development, the interwoven problems are transparent. With this backdrop of knowledge, this chapter will conclude the study by recounting the most important findings of this thesis, offering an explanation as to the value and contribution of the research performed, and proposing future steps of action.

Infill is a contested term used publicly to support several imaginaries. The San Francisco Bay Area case study provides local examples of this conflict, detailing the varied understandings, behaviors, and interactions with infill projects that differ in size, funding, and completion. The inclusion of nontraditional infill development adds to the complexity of infill as a term, as well as the potential solutions that accompany its imaginaries.

This study aimed to explore the literature revolving around infill development. Infill development has enormous potential in the state of California; it can meet the state's housing demands for at least the next two decades if the potentials are maximized. But there are countless complications to this capacity, as infill is not what it is popularly made out to be. On a large scale, infill is neither good nor bad. Instead, it, like all other technologies and tools, can be used for great and exciting action or destruction and evil. Regardless, within each sector of actors, whether that be state or local governments, developers, academics, activists, or residents, many currently proclaim infill is entirely good or entirely bad.

When the details of this pro- and anti-infill bifurcation are described, the concept is revealed to contain a multi-sided, complex process. The sociotechnical imaginary of infill as a golden solution to California's housing troubles is inaccurate and anything but useful. Likewise, the narrative that outright disregards infill is equally harmful. There is so much at stake, from



individual memories of a local bicycle shop, as seen in Mann's Op-ed, to deeply ingrained patterns that resist the migration of residents according to race and income, as seen through Laura Pulido's work.

To resolve these issues of size and power, long-standing dynamics must be taken into consideration and actors must be placed within a balanced system rooted in communication. From this structure, analysis can be performed and dispersed across all levels, which must then be utilized to obtain conclusions that place priority on local, individual circumstances. As has been shown thus far, promoting and demoting infill, and consequently offering large/no support in the forms of funding and action is detrimental to California's current condition. The crises California is facing are immense in size, but the solution is voluntary and studied action on the local level, not the forced and misguided attempts at collective infill development of recent years.

Regarding contributions, this paper adds to the interdisciplinary study's focus on housing and development. Regarding modern, large-scale action, little attention has been placed on the encompassing impacts of infill narratives. As seen through the conclusion of this study, previous researchers have overly-prioritized the problems of their narrow, specific industry, not placing into consideration the broader impacts in play. Further, the lack of nuance found amongst large-scale actors emphasizes the lack of local consideration. However, as an unfortunate consequence of an encompassing approach, the conclusions of this study have been made without a direct focus on a single or specific entity. Therefore, as a recommendation for future research, the most local and affected actors—the potential neighbors and residents of planned, low-income infill development—deserve further study. The physical effects of infill development on these local actors are highly impactful, yet governmental agencies and development firms

label their actions as universally beneficial, disregarding local distinctions. The nuances of infill development demand this research, as there is much in the balance of residential real estate futures; California's residents, neighborhoods, cities, and the entire environment depend on it.

## References

- Alexander, J. (2018). Domesticity On-Demand: The Architectural and Urban Implications of Airbnb in Melbourne, Australia. *Urban Science*, 2(3), 88-98.  
<https://doi.org/10.3390/urbansci2030088>
- America Counts Staff. (2021, August 25). *CALIFORNIA: 2020 Census*. Census Bureau.  
Retrieved March 23, 2022, from  
<https://www.census.gov/library/stories/state-by-state/california-population-change-between-census-decade.html>
- Brinig, M., & Garnett, N. (2013). A Room of One's Own? Accessory Dwelling Unit Reforms and Local Parochialism. *Urban Lawyer*, 45, 519-569.
- Brosnahan, C. (14, 5-6). *Housing Solution: Backyard Cottages Could Add One-Third More Homes to San Francisco*. San Francisco Public Press.  
<https://www.sfpublicpress.org/housing-solution-backyard-cottages-could-add-one-third-more-homes-to-san-francisco/>
- Calavita, N., & Mallach, A. (Eds.). (2010). *Inclusionary Housing in International Perspective: Affordable Housing, Social Inclusion, and Land Value Recapture*. Lincoln Institute of Land Policy.
- The California Department of Housing and Community Development Announces \$11.2 Million for Green Affordable Transit Oriented and Infill Housing in Santa Clara County: [1].  
(2014). *Targeted News Service*.
- California Housing Consortium. (n.d.). *Policy News*. California Housing Consortium. Retrieved November 12, 2021, from <https://calhsng.org/policy-news/>

- Chew, A., & Muñoz Flegal, C. L. (2020). *Facing History, Uprooting Inequality: A Path to Housing Justice in California*. PolicyLink.
- City Council of San Jose. (2017). *Santana Row/Valley Fair Urban Village Plan*.
- City of Irvine. (2019). *Great Park Neighbors*. City of Irvine. Retrieved April 11, 2022, from <https://www.cityofirvine.org/orange-county-great-park/great-park-neighbors>
- Cronon, W. (2003). *Changes in the Land : Indians, Colonists, and the Ecology of New England*. Farrar, Straus and Giroux.
- Evans, K. (2021). Overcoming Barriers to Tiny and Small Home Urban Integration: A Comparative Case Study in the Carolinas. *Journal of Planning Education and Research*, 41(3), 270-281. <https://doi.org/10.1177/0739456X18788938>
- Gabbe, C. J., Kevane, M., & Sundstrom, W. (2021). The effects of an “urban village” planning and zoning strategy in San Jose, California. *Regional Science and Urban Economics*, 88.
- Gabbe, C. J., & Pierce, G. (2020). Extreme Heat Vulnerability of Subsidized Housing Residents in California. *Housing Policy Debate*, 30(5), 843-860.
- Galassini, L. (2014). *Hidden Density: A Proposal for Single-Family Infill Housing*. University of Washington.
- Garzón, C., Dominie, W., & Gordon, M. (2014). Pollution-free housing for all: Coalition-based research, education, and advocacy for healthier housing in transportation and land use planning in the San Francisco Bay Area. *Environmental Justice*, 7(6), 186-190.
- Giesecking, J., Mangold, W., Low, S., Saegert, S., & Katz, C. (Eds.). (2014). *The People, Place, and Space Reader*. Routledge, Taylor & Francis Group.
- Governor’s Budget Summary. (2017). *Housing and Local Government 2017-2018*. CA Gov.

- Governor's Office of Planning and Research. (2022). *Infill Development - Office of Planning and Research*. CA Office of Planning and Research. Retrieved March 5, 2022, from <https://opr.ca.gov/planning/land-use/infill-development/>
- Greene, D. (2021, June). *How to Succeed in Real Estate Investing Using the BRRRR Method*. BiggerPockets. <https://www.biggerpockets.com/guides/brrrr-method#breaking-down-the-brrrr-method>
- Kinney, J. (2016, March 3). *Connecting California's Climate Change Fight to Affordable Housing*. Next City. Retrieved November 12, 2021, from <https://nextcity.org/urbanist-news/entry/california-cap-and-trade-revenue-benefits-affordable-development>
- Knight, H. (2020, December 5). *SF City Hall scandal: Why were lavishly paid public servants allegedly bribed for so little?* San Francisco Chronicle. Retrieved May 2, 2022, from <https://www.sfchronicle.com/bayarea/heatherknight/article/S-F-City-Hall-scandal-Why-were-lavishly-paid-15777995.php>
- Landis, J. D., Hood, H., Li, G., Rogers, T., & Warren, C. (2006). The Future of Infill Housing in California: Opportunities, Potential, and Feasibility. *Departmental Papers (City and Regional Planning)*, 39.
- Lennar Research Center. (2016). *The coming decade for residential design*. Lennar Resource Center. Retrieved March 22, 2022, from <https://resourcecenter.lennar.com/real-estate-news/the-coming-decade-for-residential-design/amp/>

Lin, M., Lindheim, D., & Smith, M. E. (2017). Housing is essential: A commonsense paradigm shift to solve the urban displacement and racial injustice crisis. *Berkeley Planning Journal*, 29(1), 79-99.

Los Angeles County Department of Regional Planning. (2009). *Housing Element Update Overview Get Involved Public Meetings Program EIR Draft Housing Element 2014-2021 housing Element & Resources Program 5: Infill Sites Utilization Program*. Department of Regional Planning. <https://planning.lacounty.gov/housing/program5>

Marine Corps Air Station El Toro. (1991). *Master Plan of the Year 1991*. Commander, Western Division, Naval Facilities Engineering Command.

Mawhorter, S., Martin, A., & Carol Galante. (2020). California's SB 375 and the pursuit of sustainable and affordable development. In *Transportation, Land Use, and Environmental Planning* (pp. 497-521).

McQuillan, L. J. (2020, January 8). *How to Restore the California Dream*. Independent Institute. Retrieved March 5, 2022, from <https://www.independent.org/publications/article.asp?id=13013>

Menendian, S., Gambhir, S., French, K., & Gailes, A. (2020, October 7). *Single-Family Zoning in the San Francisco Bay Area | Othering & Belonging Institute*. Othering & Belonging Institute. Retrieved April 11, 2022, from <https://belonging.berkeley.edu/single-family-zoning-san-francisco-bay-area>

Miles, M. E., Netherton, L. M., & Schmitz, A. (2007). *Real Estate Development: Principles and Process*. Urban Land Institute.

Monroe Group. (n.d.). *Affordable Housing History*. Monroe Group. Retrieved November 13, 2021, from <https://www.monroegroup.com/about-us/affordable-housing-history/>

- Murar, K. (2021, March 1). *Great Park Grows, to Resume Land Sales in 2021*. Orange County Business Journal. Retrieved April 20, 2022, from <https://www.ocbj.com/news/2021/mar/01/great-park-grows-resume-land-sales-2021/>
- Office of the Mayor. (2022, February 4). *San Francisco Secures Over \$200 Million in State Funding for Affordable Housing | Office of the Mayor*. City and County of San Francisco. Retrieved April 30, 2022, from <https://sfmayor.org/article/san-francisco-secures-over-200-million-state-funding-affordable-housing>
- 107th United States Congress. (2001). *AB857, Infrastructure Planning: Priorities and Funding*.
- 110th United States Congress. (2008, September 30). *Sustainable Communities and Climate Protection Act of 2008 (SB 375)*.
- Porch Research. (2021, September 7). *2021 Study: How Much Value Do Granny Flats and other Accessory Dwelling Units Add to a Home?* Porch. Retrieved April 29, 2022, from <https://porch.com/advice/state-of-adu-market-2021>
- Pulido, L. (2000). Rethinking Environmental Racism: White Privilege and Urban Development in Southern California. *Annals of the Association of American Geographers*, 90(1), 12-40.
- Ramirez, M. (2021, January 22). *These Groups are Leading the Charge for Housing Justice in California*. Blue Tent. Retrieved March 5, 2022, from <https://bluetent.us/articles/organizing/california-housing-crisis-justice-groups/>
- Reid, C. K., Galante, C., & Weinstein-Carnes, A. F. (2017). Addressing California's Housing Shortage: Lessons from Massachusetts Chapter 40B. *Journal of Affordable Housing & Community Development Law*, 25(2), 241-274.

- Rosen, M., & Sullivan, W. (2014). From Urban Renewal And Displacement To Economic Inclusion: San Francisco Affordable Housing Policy 1978-2014. *Stan. L. & Pol'y Rev.*, 25(121).
- The San Francisco Planning Department. (2018, December). *sf-ADU*.
- Shearer, H., Bares, V., Pieters, R., Winkle, B., & Meathrel, K. (2018). Planning for Tiny Houses. *Australian Planner*, 55(3-4), 147-156.
- Shonkoff, S. B., Morello-Frosch, R., Pastor, M., & Sadd, J. (2011). The climate gap: environmental health and equity implications of climate change and mitigation policies in California—a review of the literature. *Climate Change*, 109, 485-503.
- Thorne, J. (2017). Does infill outperform climate-adaptive growth policies in meeting sustainable urbanization goals? A scenario-based study in California, USA. *Landscape and Urban Planning*, 157, 483-492.
- Thorne, J. H., Roth, N., & Bjorkman, J. (n.d.). Urban Growth in California: Projecting Growth in California (2000-2050) Under Six Alternative Policy Scenarios and Assessing Impacts to Future Dispersal Corridors, Fire Threats, and Climate-Sensitive Agriculture. *UC Berkeley: California Institute for Energy and Environment (CIEE)*.
- Thurston, C. W. (2017). Here comes the Sun. *Planning*, 83(3), 25-29.
- Transportation Research Board. (2009). Driving and the built environment: The effects of compact development on motorized travel, energy use, and CO2 emissions. *Transportation Research Board - Special Report*, (289), 1-111.
- United States Interagency Council on Homelessness. (2020). *Homelessness Statistics by State*. USICH. Retrieved May 1, 2022, from



[https://www.usich.gov/tools-for-action/map/#fn\[\]=1300&fn\[\]=2900&fn\[\]=6400&fn\[\]=10200&fn\[\]=13400](https://www.usich.gov/tools-for-action/map/#fn[]=1300&fn[]=2900&fn[]=6400&fn[]=10200&fn[]=13400)

U.S. Department of Housing and Urban Development. (n.d.). *Rental Burdens: Rethinking Affordability Measures* | HUD USER. HUD User. Retrieved March 22, 2022, from [https://www.huduser.gov/portal/pdredge/pdr\\_edge\\_featd\\_article\\_092214.html](https://www.huduser.gov/portal/pdredge/pdr_edge_featd_article_092214.html)

Wang, K. (2019, November). It Takes a Village: Strategies for Successful Implementation of San Jose's Urban Village Vision. *SPUR*.

Warren-Myers, G. (2012). The value of sustainability in real estate: a review from a valuation perspective. *Journal of Property Investment & Finance*, 30(2), 114-144.  
<https://www.emerald.com/insight/content/doi/10.1108/14635781211206887/full/html>

Warren-Myers, G., & Hurlimann, A. (2021). *Climate change and risk to real estate*. The University of Melbourne. <https://minerva-access.unimelb.edu.au/handle/11343/243218>

Westcott, M. (2020). Be Prepared: Exploring Future Climate-Related Risk for Residential and Commercial Real Estate Portfolios. *The Journal of Alternative Investments*, 23(1), 24-34.  
<https://jai.pm-research.com/content/23/1/24.short>

Wheeler, S. (2001). Infill Development in the San Francisco Bay Area: Current Obstacles and Responses. *University of California at Berkeley*.

Wheeler, S. (2009). California's Climate Change Planning: Policy Innovation and Structural Hurdles. In A. Mehmood, J. Crawford, & S. Davoudi (Eds.), *Planning for Climate Change: Strategies for Mitigation and Adaptation for Spatial Planners* (pp. 125-135). Earthscan.

Winner, L. (1980). Do Artifacts Have Politics? *Modern Technology: Problem or Opportunity?*, 109(1), 121-136.