

The background of the entire page is a high-contrast, black and white aerial photograph of San Francisco. The image is composed of numerous vertical strips of varying widths, creating a fragmented, collage-like effect. The strips show dense urban development, including residential blocks, commercial buildings, and streets. The overall tone is dark and textured.

RESIDUAL SAN FRANCISCO

EVALUATING IDENTITY AND CREATING DISTINCTION
FOR BAYVIEW'S PDR DISTRICTS

A Graduate Thesis by Erik Rafael Murillo

RESIDUAL SAN FRANCISCO

EVALUATING IDENTITY AND CREATING DISTINCTION
FOR BAYVIEW'S PDR DISTRICTS

ERIK RAFAEL MURILLO

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Committee:
Ben Spencer
Jan Whittington

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ABSTRACT

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ERIK RAFAEL MURILLO

Chair of Committee:
Associate Professor Ben Spencer
Department of Landscape Architecture

This thesis explores rising inequality and the series of decisions leading up to San Francisco's intensifying social, economic, and digital divide. The decline of Production, Distribution, and Repair (PDR) land allocation reflect a shift in the city's values and serves as a framework to better understand the consequential effects of its conversion in proposed economic development plans.

PDR is an overlooked employment sector with ambiguous definitions and perceived flaws that led to misunderstandings of its appraisal, particularly in a region predominated by an increasingly influential tech industry. Creating a data inventory is necessary to form digital representations that enable discussions about the challenges and opportunities facing Bayview's remaining PDR Districts.

Recent advances in production and manufacturing management systems linked to middle-income wages are poised to challenge institutional arrangements regarding the perceptions of industrial activity within an urban context. Conceptual massing studies showing variations in density, form, and configuration further describe sets of distinctive characteristics as an adaptive visual strategy intended to evolve and advance PDR's position in writing San Francisco's future.

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1_INTRODUCTION



Image: "San Francisco, CA." Bayview Map. Google Maps. Google, October 2014. Web. 15 December 2014.

PURPOSE OF STUDY

Southeastern San Francisco is often referred to as 'Bayview' and is a collection of neighborhoods where its precarious past always seems to be a prologue to an uncertain future. It's a peninsula within a peninsula tucked away at the periphery of the outer city limits along the bay. This is the kind of place where someone could simply disappear despite being nestled between the city's bustling downtown and sprawling suburbs of Silicon Valley. Bayview is a relatively unknown area of the city that when recognized in headlines, has been the subject of far too many obituaries to count. While it's bleakness may be unavoidable, there are plentiful reminders of its importance that remain deeply embedded in the landscape.

Among the most symbolic of features are the generations of workers that spent long-lived days on the dry docks and industrial centers during and after WWII most notably in Islais Creek, Oakinba, India Basin, South Basin, and the Hunters Point Shipyard. The area's decline into obscurity was not of one single act, but a gradual process taking hold, not over weeks and months, but years, decades, and entire lives. It's a place where a plentiful number of influences constantly engraved their way onto the mind and enveloped themselves around the soul.

The exponential growth in wealth and prosperity signal yet another arduous pursuit to understand why many fear the essence of what it means to

be 'San Francisco' is being lost by pushing out the very people who have helped create it. Change for Bayview is seen in a positive light to some, though considerable uncertainty remains as to how, when, and more importantly for whom the transformation will positively impact. Much of that narrative includes revitalizing neglected areas of the city, most notably its remaining industrialized PDR land.

Over the next several years, Bayview will become an integral series of ongoing stories that aim to address citywide challenges of housing affordability, social equity, and communal representation through an odyssey of decisions that appear primed to benefit the investors of large-scale economic development projects; inevitably culminating into the physical manifestation of only the greatest ambitions.

Within any meaningful transition grows opportunity, however, it is often the underrepresented communities that become subject to the wills ever more possessed by the ecstasy and perils of prosperity. It is here the grievances within a declining industrial legacy can be brought to light to understand its rapidly altering composition, complexion, and evaluation to assess change.

Bayview has no choice but to embrace it all because it is so deeply intertwined in what happens to the rest of San Francisco, the region, and beyond.

1_INTRODUCTION

The promise of revitalization in and around Bayview reveal a number of challenges that raise concerns about how proposed economic development plans truly enable mutually beneficial outcomes that accentuate—rather than completely replace—existing contextual arrangements. Progressive participatory methods are materializing and begin to articulate the necessary contributions needed to improve underserved areas of the city, but often fail to communicate the activities of underrepresented employment sectors associated with PDR land use. An overarching concern remains as to whether technology is created, distributed, and managed equally. New alternatives for public engagement offer some confidence, but a larger discourse of inquiry is necessary to understand the varying motives and perspectives behind digital technology, the re-development of PDR, and citywide housing prices that are limiting upward mobility for middle and lower-income classes.

San Francisco can develop a more comprehensive understanding of how its declining industrial base affects people, place, and future investment not currently interpreted or associated with existing management strategies, modes of representation, and practices. It's evident that what is said, planned, accounted for, and what inevitably becomes Bayview's future could not be more polarizing.

Preservation of PDR land has merit, but with growing issues of affordable housing, inequality, and an influx of people and organizations with disposable income, a more proactive approach must consider an integrative body of research resulting in more legible concepts that move beyond policy recommendations and long-term neighborhood plans.

The recognition of PDR's historic, social, cultural, and economic value that served a great purpose in San Francisco for generations stand to be examined to ensure a conversation persists when creating a distinctive identity worthwhile for Bayview.

Given these observations, the following questions were used to structure the research and explore the most poignant issues facing San Francisco's PDR districts.

- **Is San Francisco promoting equitable opportunities for upward mobility with proposed economic development plans?**
- **How have revised definitions of 'industrial lands' and 'PDR' been interpreted and distinguished?**
- **What data accurately describes and reflects PDR activities?**
- **What characteristics of advanced production and manufacturing management systems are applicable in an urban context?**

RESEARCH DESIGN

Digital tools emphasizing localized data collection and parametric modeling have the potential to expose the underrepresented identities of industrial PDR districts that provide middle-income employment opportunities being pushed out of San Francisco.

This critical stance is in response to the rapidly changing complexion of industrial land use patterns found within the city's eastern neighborhoods.

An abundance of literature is available detailing San Francisco's history, culture, and appeal, however, there is little content describing the residual effects of its industrial employment sectors that have supported the working class for generations.¹ References such as *The Transformation of San Francisco: City for Sale* describe an immense struggle for affordable housing; *Local Protest, Global Movements: Capital, Community, and State in San Francisco* on social movements combating gentrification; or *A Negotiated Landscape: The Transformation of San Francisco's Waterfront since 1950* that focuses on the macroeconomic trends within public and private interests.

These perspectives are noteworthy and necessary when understanding San Francisco's composition, yet the literature review was used to highlight a gap in thematically led arguments tied to the complex processes within land use decisions associated with an industrial legacy. This approach does not aim to provide a preservationist solution, but rather establish a recognition of how advanced production and manufacturing techniques often tied to middle-income wages are changing the qualities, characteristics, and evaluation of urban industrial land.

1_INTRODUCTION

Primary and secondary sources were used to address the questions examined throughout the research. This includes the following means of analysis:

- Review of existing urban theory, technological, social, industrial, real estate development, economic, and commerce books, articles, documents, presentations, and reports.
- Self-guided tour of Bayview's PDR districts in Oakinba, South Basin, and India Basin.

Interview sessions were held with the following groups and organizations:

- **Bayview Residents** provided informal interviews highlighting cognitive perceptions of San Francisco's Southeastern Neighborhoods;
- **LocalData** provided an introduction to cloud-based mapping that enable communities to make data-driven decisions;
- **San Francisco Planning Department** outlined the criteria and reasoning for shifting industrial use terminology to production, distribution and repair (PDR);
- **SFMade** outlined the challenges of implementing industrial-focused enterprise in a digitally dominated city; and
- **SPUR** provided an overarching perspective on San Francisco's development agenda in relation to issues of housing affordability;

EVALUATION OF IDENTITY

A series of questions were used to evaluate Bayview's existing context. This was intended to mitigate the lack of data and provide a preliminary inventory of information. The inventory questions used in the research are:

1. **Is the site well-maintained or neglected?** Yes/No?
2. **Is the site multi-story?** Yes/No?
3. **Is there an identifiable presence for this building?** Clear Signage/Unique Feature/Identifiable Entrance(s)/Other?
4. **What is the primary building construction within this parcel?** Concrete/Wood/Metal/Other?
5. **Does the site have?** Greenwalls/Greenroofs/Solar Panels/Places to Sit/Street Trees/Bioswales/Bike Racks/Loading Docks/Large Windows?
6. **What kind of industrial activities take place here?** Production/Distribution/Repair/Combination/Non-PDR
7. **Is the space?** Noisy/Busy/Social/Quiet?
8. **Is there evidence of contamination?** Signs of Spills/Discharges Nearby/Other?

CREATION OF DISTINCTION

The following framework was used to analyze the collected data and help further articulate Bayview's PDR districts:

- General Spatial Organization
- Approximate Intensity of Use
- Legibility of Industry/Employment Clusters
- Perceived Compatibility Issues
- Prospects for Growth
- Business Retention and Expansion
- Business Attraction

One subarea was then chosen within Bayview to further determine how modifying parameters within one of the largest footprints in the Oakinba subarea can be used to formulate variations in conceptual massing studies. These parameters can be stored, mixed, modified, and matched enabling an efficient management of information. The following were the input criteria used in the valuation:

- Building Height
- Program Type
- Program Area
- Program Quantity
- Total Area

SUMMARY

While largely experimental in nature, 'Evaluating Identity' and 'Creating Distinction' describe a means in which to best understand transformations of land use and built form. The use of LocalData, Rhinoceros 3D, and Grasshopper 3D were chosen for their ability to visualize and manage data across a variety of platforms.

Creating, maintaining, and managing a digital presence is increasingly required to formulate a pathway for advancement. In today's data-rich world, formalizing PDR data promotes tools for collective analysis, debate, citizen engagement, business conversations, and scenario building. Visualizations provide users with information awareness and literacy enabling links between people and places, data and organizations, and physical and virtual environments.

DOCUMENT ORGANIZATION

The literature review frames San Francisco's themes of negligence that begin to describe recurring gaps in awareness, engagement, and accountability. Bayview's significance is further described by capturing the largely misunderstood presence and value PDR activity provides to the city. STEM jobs, advances in production and manufacturing, and the changing legibility of urban landscapes each call for a reconfiguration of industrialized PDR land in an increasingly affluent and prosperous city.

The methodology section describes how cloud based data collection and parametric modeling reveal a series of land use and urban form reconfigurations providing an adaptive visual strategy that captures the value of emergent industrial activities.

The discussion section analyzes the impact and potential influence of the conceptual models. This is followed by a summary of lessons learned and examination of potential applications in the closing reflection.

This thesis also intends to illicit additional exploration of parametric modeling capabilities and role of data in future urban planning and landscape architecture practices.

LIMITATIONS & DEFINITIONS

Secondary sources framed much of my initial perspectives about the complexities of San Francisco's history, patterns of development, and shifting economic qualities. Primary research was used to collect information on existing PDR use and activity in order to re-evaluate its meaning, value, and influence on Bayview and San Francisco. Informal interviews during two site visits largely supported original conceptions of San Francisco's social and economic issues intrinsic to its southeastern area of the city.

An important limitation of note is the lack of data on the conditions of existing industrial activities and more recent changes to industrial employment sectors. Assumptions were made for modeling purposes and do not claim external validation, but rather offer an opportunity for interpretation using visualization techniques intended to highlight relationships between built form, open-space usage, social, and economic factors.

The following are common terms used throughout the document:

- **Digital Divide** is the socioeconomic disparity between people who are enabled to actively participate and benefit from digital technology, social media, and the Internet to those who do not have these opportunities or skills.
- **Distinction** recognizes differences in regard to similar, but varying identities within an employment sector. It describes both the tangible and intangible assets used to manage their valuation for future investment and decisions regarding its design and planning.
- **Economic Development** refers to the sustained, concerted actions of communities and policy makers that improve the standard of living and economic health of a specific locality.
- **Economic Divide** refers to the unequal distribution of assets among residents including the values of housing, personal items, businesses, savings, and investments.
- **Identity** are the names, terms, designs, symbols, and features that create a presence for a particular place.
- **Industrialized Land** refers to uses involved in warehouse, distribution, manufacturing, utilities, food processing, storage, and transportation. This also includes logistical services such as the delivery and sale of goods.
- **Landscape** is a term that describes development patterns, infrastructure, cultural, social, and economic activities in an urban setting.

- **Parametric Modeling** is a process based on algorithmic thinking that enables the expression of parameters and rules that together, define, encode and clarify the relationship between design intent and the design response.
- **Production, Distribution, & Repair (PDR)** is what the Planning Department adopted to refer to the very wide variety of activities which have traditionally occurred and still occur in our industrially zoned areas.
- **Social Divide** is the notion where communities whose socioeconomic structures, opportunities for success, conventions, culture, and day-to-day norms are so different that they have substantially different psychologies.
- **STEM** is an acronym for the science, technology, engineering and math fields of employment. STEM-related programs while typically used in an educational or policy, for the purposes of this thesis defines an improved valuation and competitiveness for workforce development.
- **Tech Sector** contains businesses revolving around the manufacturing of high-end electronics, creation of software, computers or products and services relating to information technology.
- **Working Class** describes lower and middle-class people employed in industrial work sectors for wage labor.

2_LITERATURE REVIEW



Image_ A row of Victorian-style homes are typically classified as "historically significant."
San Francisco Public Library (2013)

THE URBAN PROBLEM OF SAN FRANCISCO: EXAMINING THE SOCIAL, ECONOMIC, AND DIGITAL DIVIDE

Cities are based on advantages created by spatial proximity such as division of labor, shared resources, collaboration, infrastructure, and communication. Political geographer Edward Soja describes the spatial agglomeration of people, activities, buildings and infrastructure made possible by advances in division of labor and exchanges of goods that in turn generate a series of positive social and economic externalities.¹

These advantages are brought into question when the city of San Francisco and the state of California leading into the 1970s made choices that have had long-lasting social impacts on urban development to this day, prompting a cultural re-consideration of the urban ideal. When the state's property tax revenues fell by almost 60 percent, many city governments throughout the state favored office and retail development over housing and industry in order to boost sales taxes.² California property values eventually soared, creating a bigger gap in property taxes on newly sold properties and ones that homeowners had held onto. Because Proposition 13 and rent control insulate homeowners and rent-controlled tenants from dramatic tax or rent increases when the market under supplies housing, they undermined political will for building homes.³

San Francisco's population hit a plateau in the 1980s, after steadily declining since the 1950s as the city's socially conservative left for the suburbs.⁴ Into the void of relatively cheaper rents created so many of San Francisco's wonderfully peculiar cultural revolutions. Though along with these revolutions and for the 7 million people

of the San Francisco Bay Area, it's become every city for themselves for the last 30 years, meaning preservationist organizations in every neighborhood for every city try and push the growing housing issue elsewhere. Landowners and developers typically dominate growth coalitions in large cities, but San Francisco has been different because it is a major city where progressive activists and neighborhoods have had sustained impact for nearly five decades. This is of great relevance for today's discussions of urban development patterns and the social constructs behind it. Activists fought growth to a standstill from the early 1970s into the present day on issues that concerned the livability of neighborhoods and the preservation of urban amenities.⁵ They forced developers to create affordable housing and urban space they otherwise would not have provided in exchange for permission to construct new buildings. In addition, activists won greater community-based participation in program design, and land-use planning.⁶

San Francisco's orientation towards growth control has 50 years of history behind it and more than 80 percent of the city's housing stock is comprised of either owner-occupied or rentable units.⁷ Furthermore, the city's height limits and its formidable permitting process are products of the tenant, environmental and preservationist movements over decades of social activism.

2_LITERATURE REVIEW



Image_ Protesters stage Google bus 'performance'. *Mission Local*: Daniel Hirsch (2014).

THE SOCIAL DIVIDE

San Francisco's residents have to thank some of these movements for preserving large portions of land, maintaining its character, and overall quality of life; however a major side effect is that the city only added an average of 1,500 units per year for the last 20 years.⁸ Meanwhile, the U.S. Census estimates that the city's population grew by 32,000 people from 2010 to 2013 alone.⁹ This behavior might seem absurd in the context of a housing shortage today, but considerable fear still reigns that the destruction of neighborhoods will happen again, especially if it's carried out by private developers. It wasn't long ago that protests broke out battling urban renewal projects in The Fillmore District, SoMa, and The Mission District.

What makes development different in San Francisco compared to other major U.S. cities is that building permits are discretionary rather than as-of-right. In other cities, if a developer already matches the existing zoning and height restrictions of the city plan, they often get issued

a permit. For new development in San Francisco, there's a preliminary review that takes six months, then the city also requires extensive public notice of proposed projects even if they already meet neighborhood plans.¹⁰ Neighbors can appeal and put forth the most insignificant of claims. If those arguments fail, neighborhood groups can also file a California Environmental Quality Act (CEQA) or environmental lawsuit under California state law, challenging the environmental impact of the project.¹¹ Social activism and community groups contend that whatever its economic ramifications, the demise of any development marks a significant moral victory for the state and its taxpayers.

Development agencies have historically used the state's authority to seize property using the power of eminent domain far more liberally than other public bodies. Cities in California are now free to pursue their own economic development strategies and to encourage whatever development they see fit, but the problem now is

that they will not have billions of dollars with which to do so.¹²

San Francisco's increase in displacement is at the heart of today's social divide where evictions rose 38.2 percent in 2013 from 2012 alone (38 percent in Bayview).¹³ San Francisco Mayor Ed Lee and his administration are trying to provide affordable housing projects as a first priority in the planning department's approval process, followed by market rate projects with a higher inclusionary percentage of below-market-rate housing.¹⁴

During the first tech boom, there were anti-displacement coalitions, which pushed for a moratorium on new market-rate housing and live-work lofts. Throughout the years, these movements have found alliances with other neighborhood organizations, preservationist and environmental interests. As political scientist and San Francisco observer Richard DeLeon states, "*San Francisco has emerged as a "semi-sovereign city"—a city that imposes as many limits on capital as capital imposes on it.*"¹⁵ San Francisco's first priority is not necessarily innovation—but often preservation—and protection of the city's environment, architectural heritage, neighborhoods, diversity, and overall quality of life from the transformations of American capitalism.

The overall bias is currently toward encouraging affordable housing development, however a major oversight throughout this process has been the lack of encouragement to promote or even retain what remained of the area's rapidly diminishing pool of working class jobs.

Reflecting upon these trends, it's as if San Francisco reacted 10 or 20 years after anyone recognized how transformative the suburban-urban migration would become after WWII. This issue is profound and one that is still being understood today. Some argue that regional economic booms benefit all workers by creating

more jobs throughout the economy—supporting locally-owned businesses and bringing in more tax revenue for public services—resulting in more opportunities for people not in tech based industries, than if there were no economic growth.¹⁶ As trends toward urbanization continue, San Francisco's existing social structures remains ever more intriguing to those that can afford to navigate the social, economic, and increasingly digital aspects of society. San Francisco's 'Communities of Concern' are already on the eyes of developers despite difficult and archaic planning processes that restrict growth.



Image_ James Lick Freeway under construction. *Found SF*: Ed Brady (1953).

2_LITERATURE REVIEW

Ultimately, community organizations representing disenfranchised groups have used San Francisco's planning process to win concessions from the city's development and restrict growth for the last 40 to 50 years.

In 2004, growth-control activists defeated a deceptive pro-growth ballot measure put forth by various growth coalitions by a 69% to 31% margin.¹⁷ At the time, many viewed this as a victory for San Francisco's disenfranchised groups. Nearly a decade later, some may believe the tech companies will be of assistance, but many are doubtful because there is resentment towards the technology industry that often sequesters itself from the communities it inhabits because it's evident that they have transformed the Bay Area without being changed by it.

A profound paradox has emerged. The tech sector community is both socially liberal and market-oriented because many contributors to the tech industry in San Francisco and Bay Area cities are more than happy to vote for high-tech jobs, just not for homes. Technology companies today are blurring lines between urban planning and information, all while redefining the paradigm of urbanism. Subverting the naming conventions of 'community' to suggest public access and transparency, implies something that is open to people. However, tech companies usually provide neither despite being socially liberal which is troubling and quickly becoming the rule rather than the exception in many of San Francisco's "Communities of Concern."¹⁸

SAN FRANCISCO'S "COMMUNITIES OF CONCERN" AREAS IDENTIFIED BY ABAG AND MTC AS HAVING A HIGH PERCENTAGE OF MINORITY AND/OR LOW-INCOME RESIDENTS.

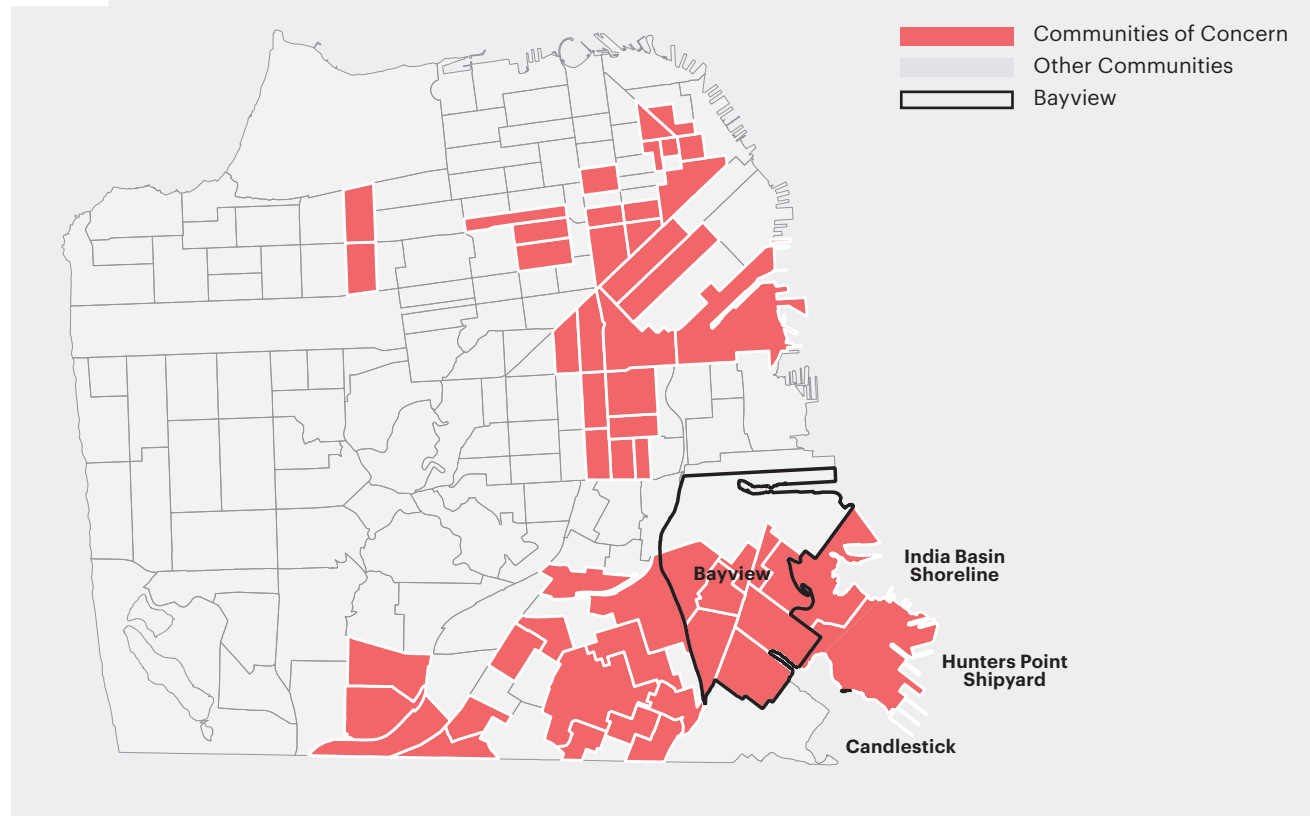
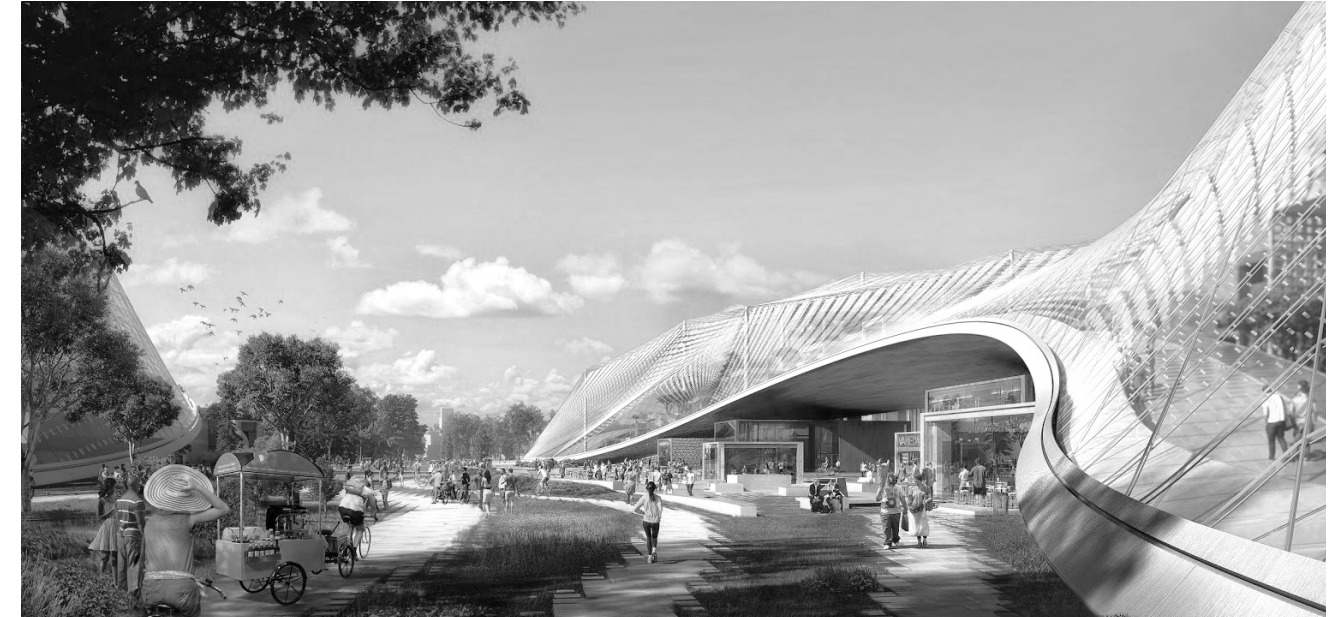


Figure 1_Communities of Concern as Identified. Metropolitan Transportation Commission (2012).



Image_ Google's plans for an new expanded headquarters in Mountain View, California is intended to rival other tech companies in Silicon Valley. Google (2015).

San Francisco's escalating issues may be best exemplified when looking at regional externalities. Nearby Mountain View proposed new office development that would bring as many as 42,550 office workers to the city, but the city's zoning plan only allows for a maximum of 7,000 new homes by 2030.¹⁹ Other Bay Area cities job-to-housing ratios is often comparable, for example, Palo Alto voters recently eradicated an affordable housing development for seniors by ballot measure in November 2013.²⁰

Twitter recently moved into new headquarters in a long-vacant high-rise on Market Street in one of San Francisco's poorest neighborhoods. The company received considerable—and highly controversial—tax incentives from the city and overwhelming support from Mayor Ed Lee.²¹ It was expected that the company's presence in a depressed section of a major thoroughfare would help revitalize it. A walk through that neighborhood years later reveal that this has yet to happen because Twitter employees have little incentive to

leave their building. While tech companies often lead trends, one has to ask how much further will this type of lifestyle extends to becoming the norm in society. New restaurants, cafés, barbershops, or services such as laundromats are kept away by high commercial rents—though many buildings remain vacant as landlords continue to hold out for the highest bidder.²²

THE ECONOMIC DIVIDE

It's no secret that much of San Francisco's recent development is driven by the tech industry. Economist Enrico Moretti calculated that a single tech job typically produces five additional jobs.²³ In San Francisco, that multiplier effect may be much smaller because so much of its residents' incomes end up going toward housing costs. The city's economist Ted Egan estimates that each San Francisco tech job likely creates approximately two extra jobs, not five.²⁴ This evolution presents an enormous distortion of polarizing perceptions and difficult to overstate how arcane its system of development became leading up to and after the

2_LITERATURE REVIEW

first dot-com boom and bust. Nonetheless, there is no doubt that its spillover effects have been responsible for virtually all of the city's job growth since 2010. Much of that growth is in good part generated Internet, software, scientific R&D, and pharmaceutical sectors.²⁵ All of which hold high appeal to any city.

Despite the city's growing prosperity, there is growing concern that San Francisco has entered an era where opportunity and economic well-being for the average working class worker has become decoupled. That's in part because in the rich are getting richer and the poor are getting poorer. Rising income inequality is growing at the fastest rate in the country in San Francisco, according to a 2012 Brookings Institute study.²⁶ It also reported that from 2007 to 2012, San Francisco's income gap widened more than any other U.S. city.²⁷ While the tech industry is fueling the city's current boom and has helped cut the city's unemployment rate by about half since 2010.²⁸ This is not specific to San Francisco, it's happening all over the country and around the globe. Universal economic changes are dividing urban workforces into highly skilled workers who are disproportionately benefiting from growth as lower skilled workers often with service jobs see little to no wage-increases over time.

While it's clear that housing costs dampen the multiplier effects because people end up spending so much more on rent, transportation, and other increasingly costly necessities. It's hard to have a comparative analysis over modest increases in the housing supply because of this ideological dispute between development and preservation. This city may be the center of innovation, but little of its disruptive thinking is doing anything to address the major urban issues of its generation. The implications of urban renewal are only now being realized and now a similar pattern is arguably taking shape with the growing tech sector. It is a pervasive force driving many social and economic

decisions, yet the further it steps away from reality of the problems it's engaging with, the less likely they'll end up actually fixing anything.

Affordable housing advocates claim developers should be required to have a higher percentage of below-market-rate units built. The issue with inclusionary housing is that construction costs are so high in San Francisco—calculated to be nearly \$500,000 for an 800-foot square unit—that affordable housing requires generous public subsidies.²⁹ The Mayor's Office of Housing and Community Development states there are 1,759 units of affordable housing that are currently being built or preserved at a cost of \$824.5 million. About \$274.1 million of that funding is sourced from the city while the remaining \$550.4 million to bridge that gap remains uncertain.³⁰

Trulia was online residential real estate recently acquired by Zillow on July of 2014. Their site study examined housing production since 1990 and prices in 10 of the U.S.'s biggest tech hubs, it revealed that San Francisco had the highest median prices per square foot and had the lowest number of new construction permits per 1,000 units between 1990 and 2013.³¹ In places where zoning regulations create artificial limits on home production, the final prices to homebuyers jump far above construction costs. In the 1980s and 1990s, virtually all of San Francisco's home prices were at least 140 percent above base construction costs creating an artificially inflated pricing.³²

San Francisco's tech economy today is a different blend of companies than it was in pre-crash of 2001. There's a major difference between established companies like Google, Apple, Dropbox, Twitter, and Facebook as compared with start-ups of the dot-com boom. They are more mature, less reliant on venture capital, structured to weather market cycles, but also carry major influence in political systems.³³

CITIES EXPERIENCING LARGE INCREASES IN INEQUALITY IN LATE 2000S

Rank	City with Largest Increases	Change in 95/20% Household Income Ratio
1	San Francisco, CA	3.9%
2	Atlanta, GA	3.1%
3	Miami, FL	2.1%
4	Sacramento, CA	2.0%
5	Jacksonville, FL	2.0%
6	Milwaukee, WI	2.0%
7	Indianapolis, IN	1.7%
8	Baltimore, MD	1.6%
9	Charlotte, NC	1.6%
10	Tucson, AZ	1.5%

Figure 2_Analysis of 2007-2012 American Community Survey data. Brookings Institute (2014).

HOME PRICES VS. CONSTRUCTION PRICES

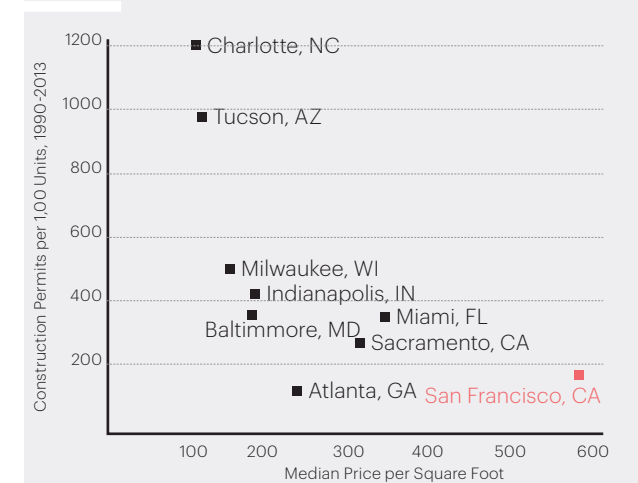


Figure 3_Home Prices vs. Construction Prices in the top 10 U.S. Tech Hubs. Trulia (January, 2014).

WHERE SAN FRANCISCO PLANS TO ADD 72,000 RESIDENTIAL UNITS

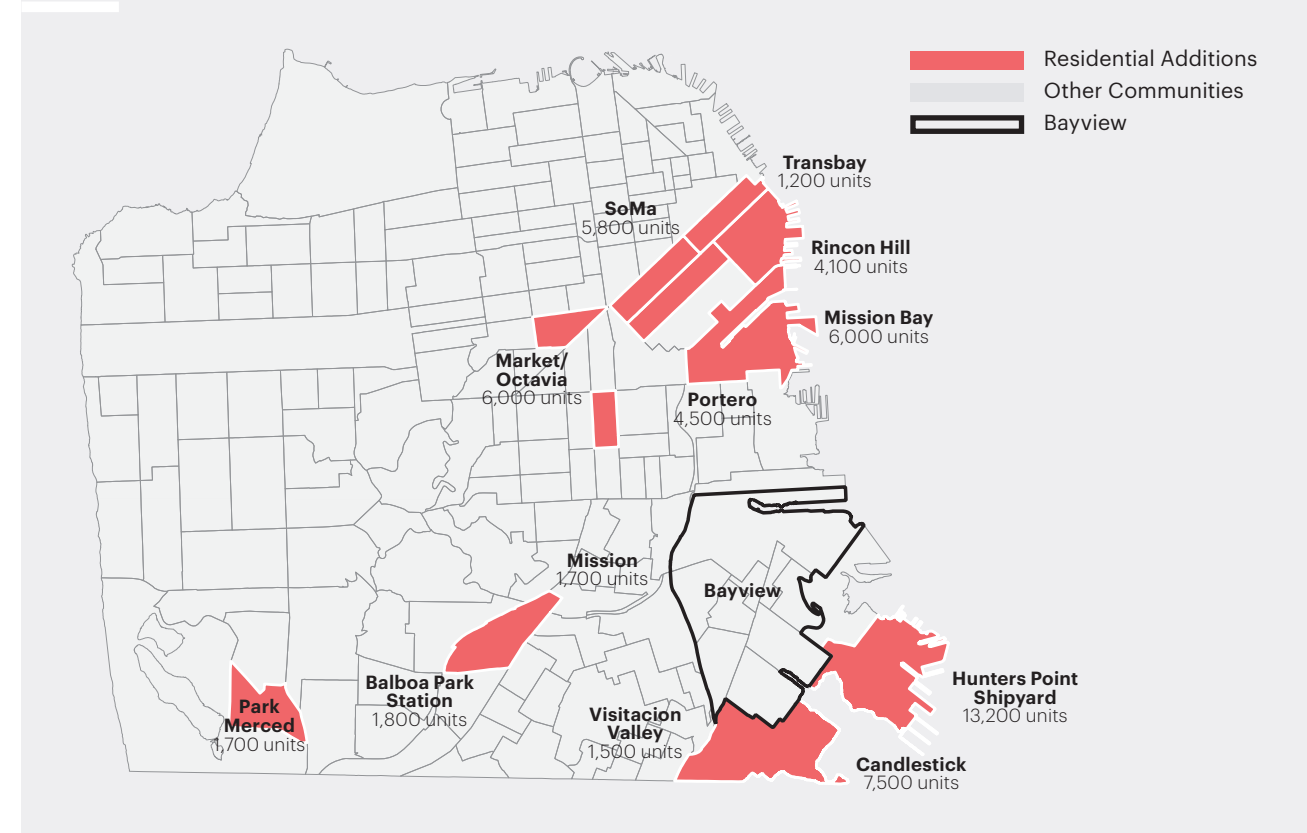


Figure 4_Where San Francisco Plans to Add 72,000 Residential Units. Metropolitan Transportation Commission (February 1, 2012).

2_LITERATURE REVIEW

San Francisco has a thriving, exporting tech industry that is driving growth across the rest of the local economy. In the long term, however, its prosperity is threatened by internal risks in the areas of housing, education, and access to opportunity. In particular, the high cost of housing has already become a barrier to growth; if businesses can't find space, can't attract the workers they need and can't pay the high costs of doing business in the Bay Area, they will choose to locate elsewhere. The transaction costs of housing and commercial rents are already choking weaker PDR sectors.

California formerly sponsored development through Tax Increment Financing (TIF). It started out modestly enough in the urban renewal era and operated below the state's radar for decades.

It's hard to ignore the aspects of state financing and today's growing valuation of the innovation sector as a provider of benefits to the city.

Looking back, the net benefit for San Francisco and similar cities for those arrangements is typically zero or negative and has left places like Bayview in shambles and wondering for a renewed sense of self. While every project and place is unique, research on development notoriously difficult to study despite its multibillion-dollar consequences. That complexity will only continue to grow with advances of digital technology.



Image_ Candlestick was the former home and stadium of the San Francisco 49ers. The team recently left town for Levi's Stadium in Santa Clara. *Patricia Chang Photography (2015).*

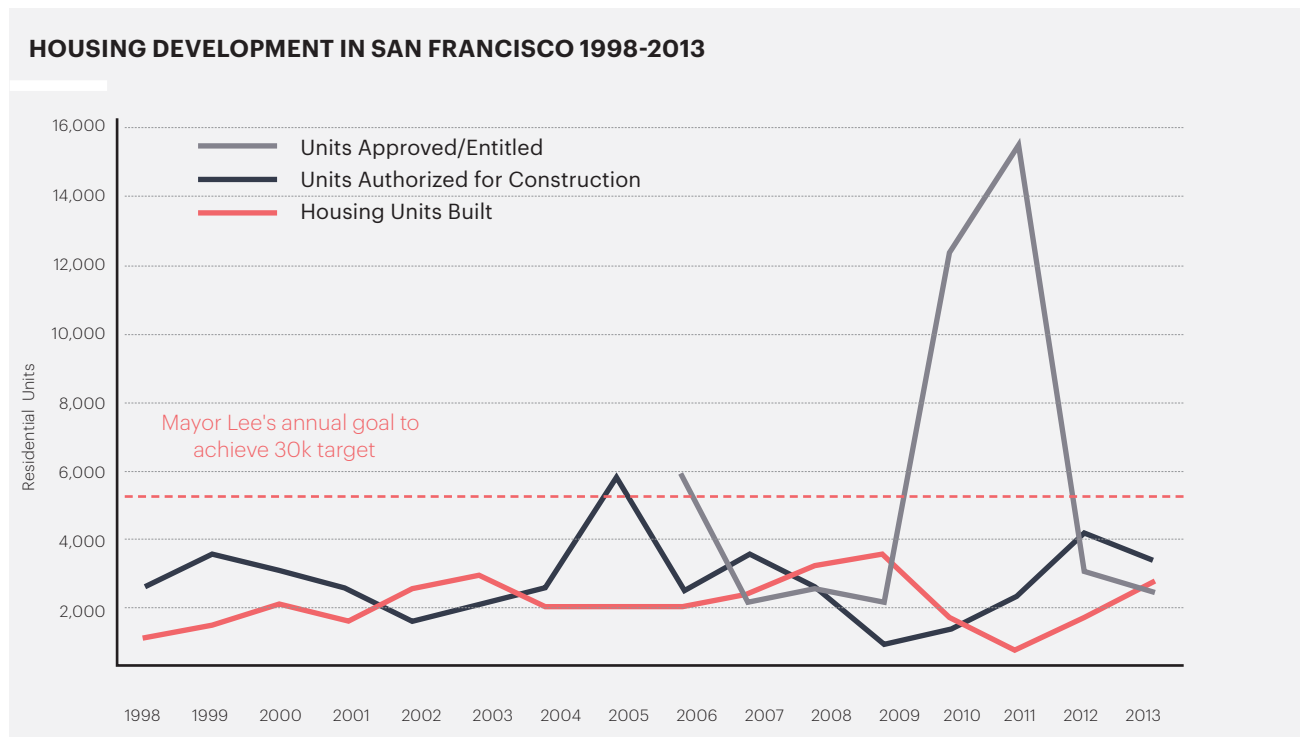


Figure 5_Data from Housing Inventory 1998-2013, *San Francisco Planning Department (2014).*

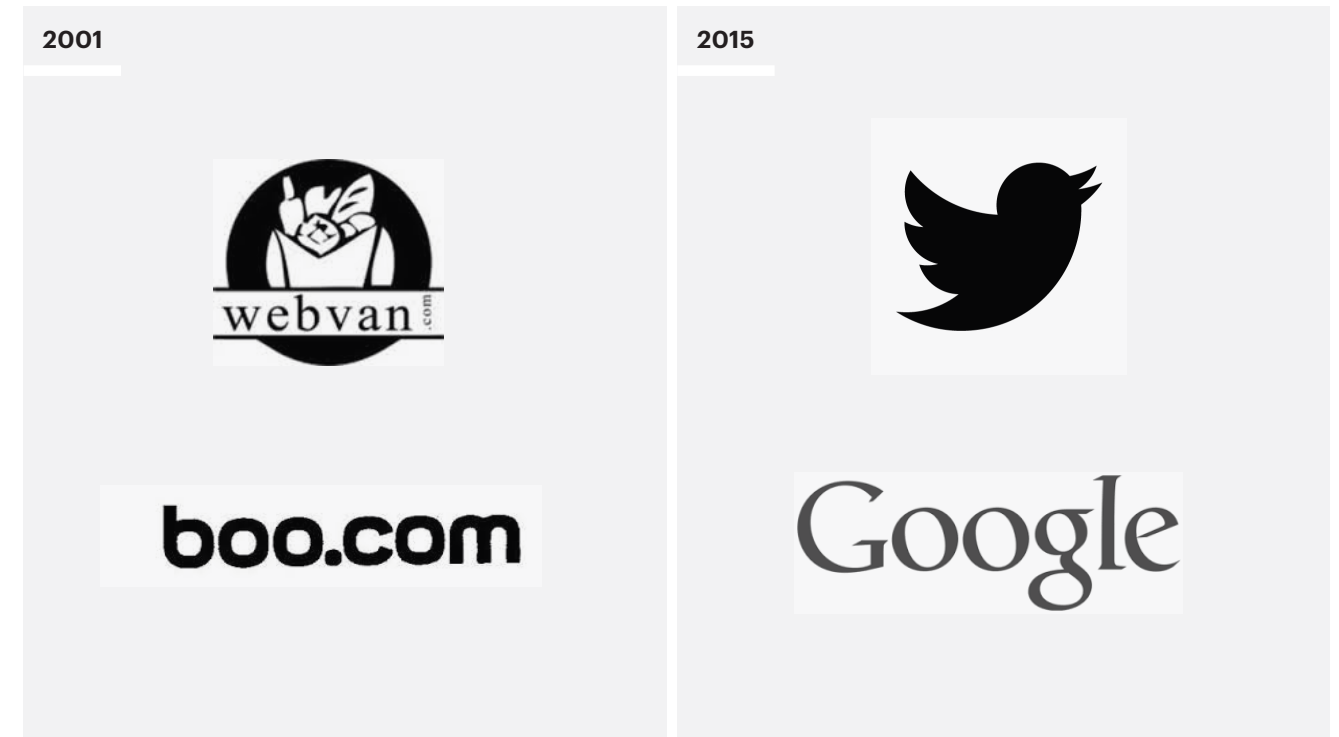


Figure 6_San Francisco tech company logos circa 2001 and 2015.



Figure 7_Geospatial Data from Social Media Showing Driving, Running, and Cycling Data. Human.co, Inc. (2014).

THE DIGITAL DIVIDE

As cities continue to address their social and economic issues, they are increasingly criticized for ignoring physical qualities and societal character in utopian solutions characterized by top-down processes. These processes are typical to large-scale development and smart-city programs that led to ethical dilemmas of participation and representation.³⁴

Information always played an integral part of the urban development discourse, but given the seemingly wide array of data originating from municipal government, smart-city programs, and citizen-led initiatives, there is a glaring divide in usage among San Francisco’s social classes. A common perception is that urban citizens today are informed by websites, Tweets, and YouTube videos. As media and metrics continue to grow in popularity—and authority—it’s already radically changing related urbanism practices and approaches. Despite these advances, urban data’s

relationship to public space scarcely explores sensory, structural, and cultural aspects as urban systems of literacy and legibility.

Several theorists have outlined provocative themes while exploring such topics. Michael Weinstock states that “Society has already begun to transit through the long anticipated threshold of an explosion of ‘information’ and associated new technologies, and the social and economic consequences have made substantial transformations of cities. We are more mobile, and our social and work relations are spread over a larger area than in the past, therefore-what is ‘local’ is more difficult to define today.”³⁵ Within technology, much like that of urban development lays both a significant promise and problem. Access to essential services do not always ensure the reciprocal feedback required to make judgments or accurately compile a snapshot of what a district needs. Anthony Townsend calls for multidimensional measures that paint a richer

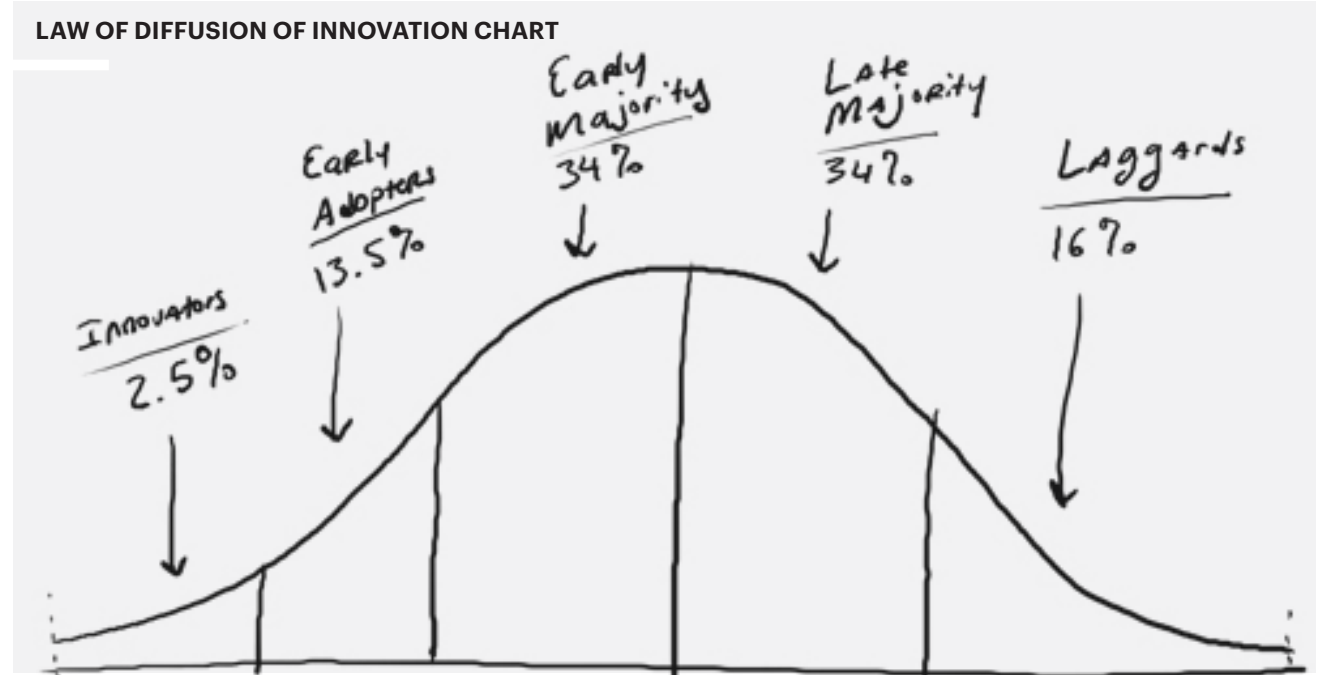


Figure 8_Sketch of Everett Rogers Law of Diffusion. Everett Rogers, Diffusion of Innovations (2003).

picture, he states, “we don’t really understand how each city’s economy and culture emerge from the decisions and actions people take everyday. How micro-scale actions connect to macro-scale outcomes. And that’s why I continuously preach that the killer app for technology-infused cities isn’t efficiency, it’s sociability. It’s creating new conduits for information to flow between minds, to coordinate with them.”³⁶

The most exciting new technologies don’t seem to be the ones that invisibly optimize and act in our interest in the background, but the ones that plug us into each other and into civic engagement processes to act together. Geographer David Harvey presents his stance on city planning and policy in the relation to social justice and space as a line of inquiry that transcends existing economic approaches. He states, “The inner logic that governs the laws of capitalism is cold, ruthless and inexorable, responsive only to the law of value. Yet value is a social relation, a product of a particular

historical process. Human beings were organizers, creators and participants in that history.”³⁷

Any new idea, process, or technology requires a rate and percentage of acceptance or adoption. Sometimes its fast and sometimes is slow. It is here that the Diffusion of Innovations theory by Everett Rogers seeks to explain how, why, and at what rate new ideas and technology spread through cultures.³⁸ Any adoption requires a critical mass in order to self-sustain meaning and value to a larger audience. Change is always inevitable, yet the volatile nature in which digital technology lives in with makes it difficult to sustain long or even medium-term visions for urban development. There are numerous potential benefits of a tech led democratization and understanding of development decisions, but equally a number of drawbacks that are yet to be realized.

2_LITERATURE REVIEW

SHIFTING GOVERNANCE, WHOSE FUTURE IS IT?

Essentially, it's a new story in the same frontier. The American dream is once again playing itself out in the Bay Area. San Francisco is unique and wonderful, but its issue of inequality continues to grow. The newfound digital divide foreshadows major implications for other cities seeking to capitalize on the latest innovations technology promises to bring. The digital divide explored in the literature review raise much larger questions about the role of data, participation, and development. Former Mayor of New York City Michael Bloomberg whose business was built on the delivery of financial information to traders around the world rules through complex data management. He famously stated *"If you can't measure it, you can't manage it."*⁴⁹ It's a provocative statement that demonstrates the emerging allure for cities participating in the race to incorporate big data strategies into city planning scenarios.

To boost economic development, planners are often told they must attract innovative companies and innovative people—as the designers are told to create attractive all exclusive offices. Creating ideal environments for innovation require different incentives from the tax breaks and relocation packages used to attract companies in the past. As planners and designers attempt to attract innovators to their city, they're also reacting to the outcomes of the tech sector's actions.

In retrospect, the same residents with absurd rents or mortgages are also the ones protesting on gMuni bouncy balls in the streets because they believe San Francisco can offer something for everyone. The exponential increase in income inequality is troubling, but it also has one of the highest levels of income mobility in

the country. Harvard and Berkeley economists Raj Chetty, Nathaniel Hendren, Patrick Kline and Emmanuel Saez examined federal income tax records for 40 million children and their parents between 1996 and 2012. They found that children in San Jose and San Francisco had the highest chances of moving from the bottom income quintile to the top quintile out of all major metropolitan areas in the United States.⁴² It's important to remember that cities are unequal as they attract both the very rich and the very poor because of the opportunities they historically provide. San Francisco's extreme juxtapositions of wealth and poverty exist because the city is both an extremely desirable place to live and it maintains protections for residents through programs like rent control and \$165 million a year in spending on homelessness.⁴³ Antagonism only ensures that urban development deals will happen behind closed doors. Corporations and developers will most frequent path of one of least resistance because they are incentivized to increase their worker's wages instead of engaging in regional politics. That is a loss for everyone and an important factor to consider with any type of development plan, land use revision, or preservationist attitude to change.

The bias for encouraging 'innovation districts' ignores what remains of the rapidly diminishing pool of working class jobs. Here a certain degree of awareness of the causal effects need to be acknowledged. This is most evident in San Francisco's southeastern neighborhoods and its remaining industrial core in Bayview. Concerns about gentrification have been going on for decades long before Facebook or Twitter even existed. Companies like Gap, Wells Fargo, Levi Strauss & Co. and Salesforce also have long histories of participating in San Francisco's civic

life, but development of a new legacy is becoming increasingly concerning.⁴⁴

The reality for San Francisco is that housing alone is not enough to sustain upward mobility. Sociologist Richard Sennett considers the assumptions of proximity by stating, *"Cities are places where learning to live with strangers can happen directly, bodily, physically, on the ground."*

*The size, density, and diversity of urban populations make this sensate contact possible - but not inevitable. One of the key issues in urban life, and in urban studies, is how to make the complexities a city contains actually interact."*⁴⁵

Advances in 3-D printing and manufacturing—happening in Fab Labs around the world—have exciting implications for expanded access to



Image_A playground at the Alice Griffith public housing development burns to the ground after being set on fire. Slate: Alex Welsh (2013).

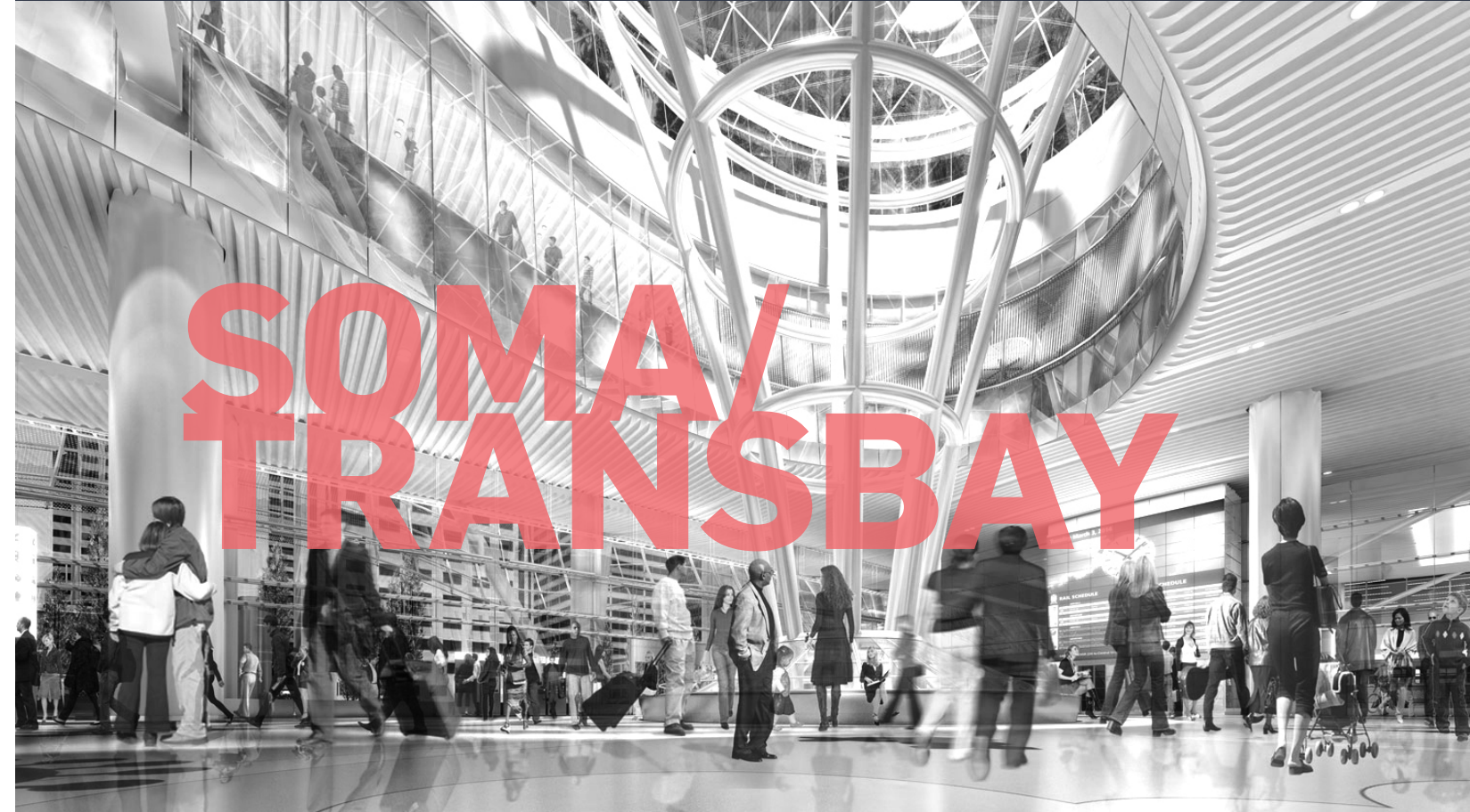
2_LITERATURE REVIEW

manufacturing tools, and the growth of small-scale manufacturing locally.⁴⁶ At the same time, there will be obvious effects on traditional manufacturing space and jobs that planners must navigate progress.

Promoting an understanding of PDR land use in relation to social and spatial systems as co-dependent processes is daunting, but essential to frame a larger conversation regarding the future of San Francisco and particularly of that in Bayview. While society attempts to understand the implications of the tech sector's advances, there is much to learn in the potential depth and intensity of human experiences as part of the urban fabric. Kevin Lynch reinforces this statement in

his seminal book *Image of the City*, by expressing his belief that the city in itself is increasingly a powerful symbol of a complex society defined as having meaning for the observer, whether practical or emotional he calls for not a final but an open-ended order, capable of continuous further development. "We must learn to see the hidden forms in the vast sprawl of our cities. We are not accustomed to organizing and imaging an artificial environment on such a large scale; yet our activities are pushing us toward that end."⁴⁷

The dominance of globalized capital, coupled with San Francisco's pivotal role within the tech industry have fundamentally transformed the city. As its economy has shifted, longtime



Image_T Transbay Transit Center's Grand Hall is frequently described as the Grand Central Station of the West. Transbay Joint Powers Authority (2014).

MAJOR DEVELOPMENT AREAS IN SAN FRANCISCO

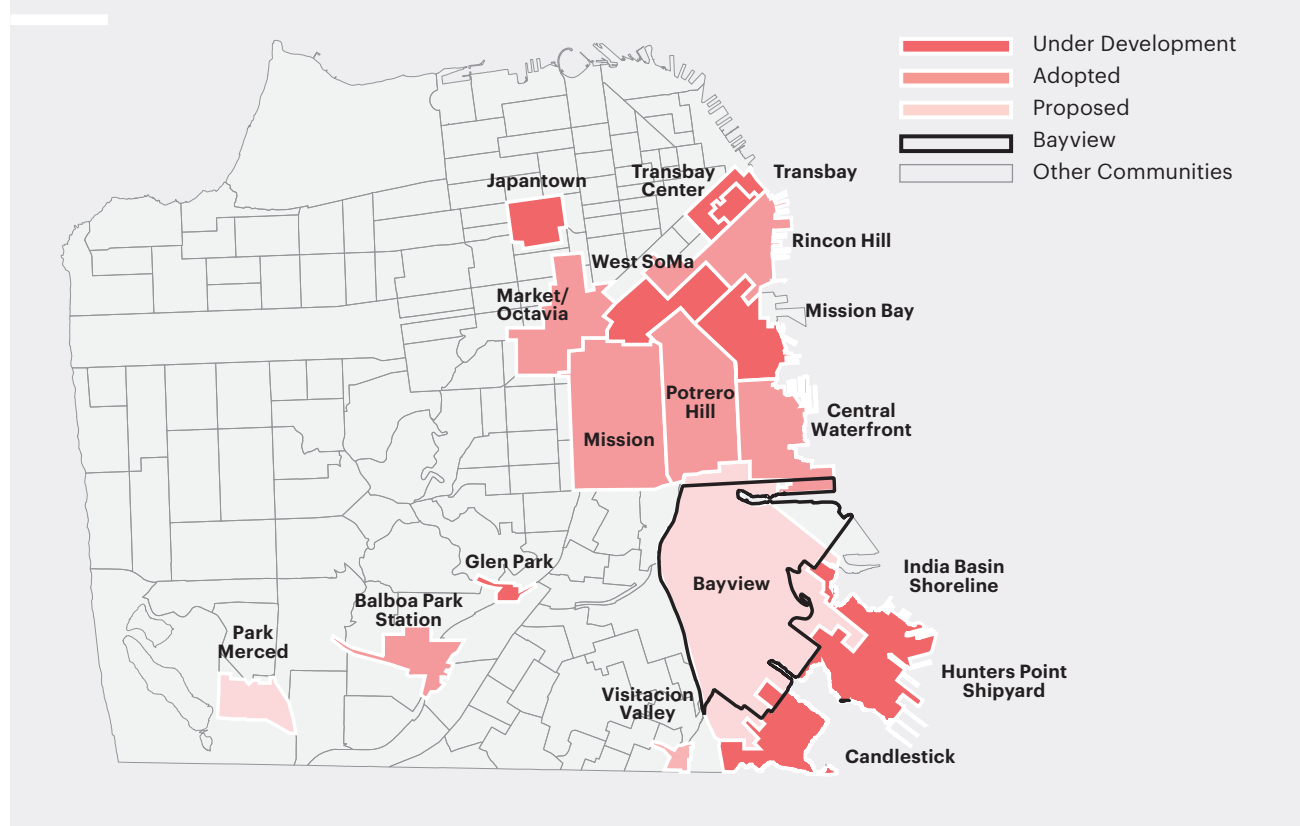
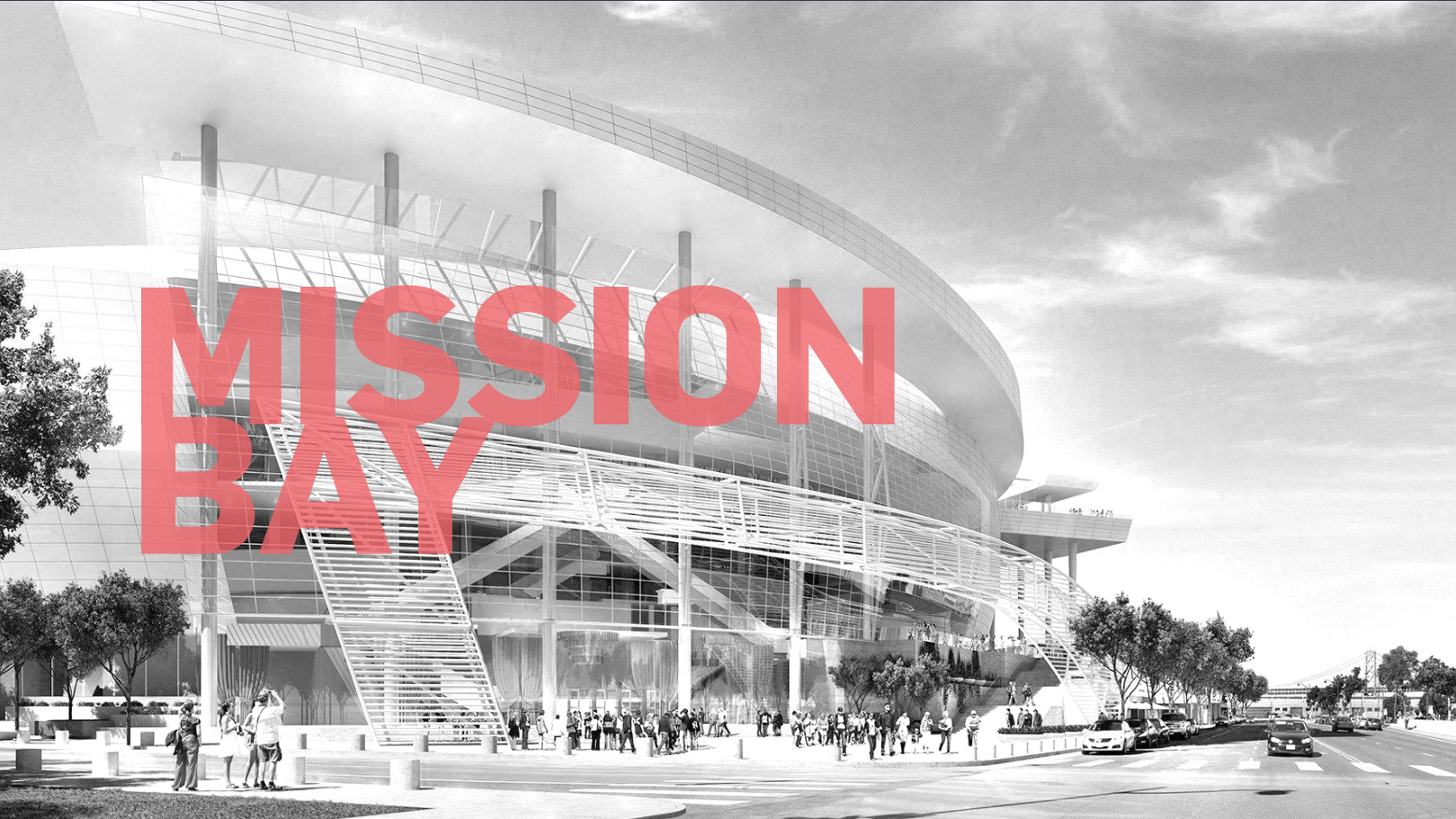


Figure 9_Major Development Areas. Metropolitan Transportation Commission, (February, 2012).

CASE STUDY

Transbay is a massive redevelopment plan for the SoMa Financial District. The new transit center will replace the demolished San Francisco Terminal and surrounding industrial buildings with new skyscrapers, one of which will be the new Salesforce Tower, and will take advantage of the height increases allowed in the amended plan.

The Transit Center is on track for completion in 2017. An estimated 20 million people will come through the new terminal each year.



Image_Warriors New Sports and Entertainment Center. MANICA Architecture (2014).

CASE STUDY

Before urbanization, Mission Bay was nestled inside of a +500 acre salt marsh and lagoon, and was occupied by year-round tidal waters.

Mission Bay is currently the headquarters of the California Institute for Regenerative Medicine. It is also the headquarters, at 550 Terry Francois Blvd, of the Old Navy brand of The Gap clothing retailer.

More recently, Mission Bay has become a popular destination for new projects. Uber will partner with developer Alexandria Real Estate Equities to build a world huge headquarters complex and the Golden State Warriors plan to build a new stadium nearby. Additionally, the University of California San Francisco has a growing medical and biotech campus in the neighborhood.

businesses, particularly large-scale manufacturing, production, and distribution have departed for the East Bay, other states, and overseas. Christopher VerPlanck of *VerPlanck Historic Preservation Consulting* argues that many working class San Franciscans who depended on these jobs are also being pushed out in this process. His approach consists of preserving 'light' industrial zones to nurture newer artisan-based and small-scale manufacturing industries in San Francisco.⁴⁸

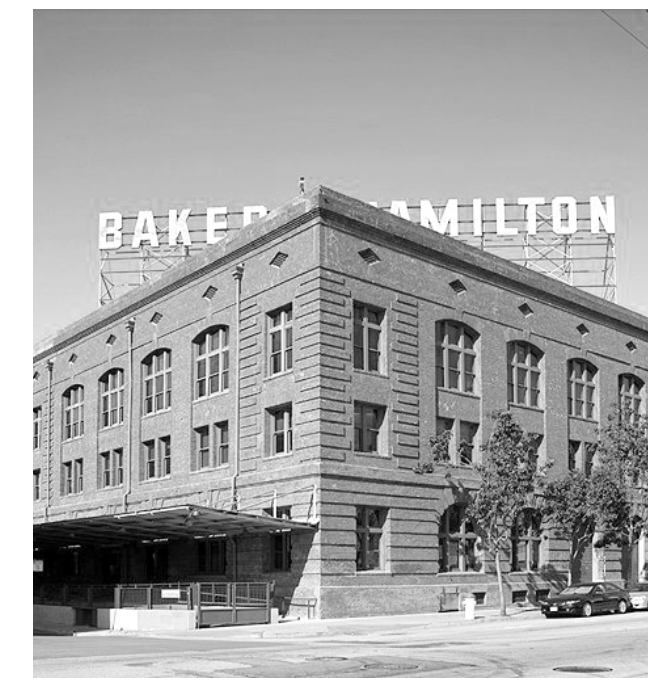
The original Eastern Neighborhoods Plan provided an instrument to accomplish a broader understanding of its changes, however, that plan didn't connect concurrent conversations on affordability and equality issues throughout the city and region. The Eastern Neighborhoods Plan, which actually consists of four specific sub-area plans—one each for Transbay/East SOMA, the Central Waterfront, Potrero Hill, and the Mission—was crafted in response to trends unleashed during the first dotcom boom of 1997-2001.⁴⁹ Nearly 40% of industrialized/PDR activity exists in Bayview, yet the area is frequently not acknowledged as part of San Francisco's comprehensive and cohesive strategy for PDR land use.⁵⁰ Effects of accelerating high-end residential development have continuously influenced the plan and altered in goals and objectives from its inception, questioning the very foundation of zoning controls established by the Planning Department for industrial uses. Local factors are also to blame, particularly the accelerating value of industrial land for residential and office development, which has raised rents beyond the reach of many industrial and PDR entrepreneurs.⁵¹

The tech sector has eagerly gravitated to the industrial areas of the Eastern Neighborhoods. Many of its buildings are older historic warehouses and factories, typically with large floor plates, flexible interiors, and exposed brick-and-concrete facades—the quintessential industrial chic aesthetic— and is of greatly appeal to many

organizations. One example of this transformation is in the former Baker & Hamilton warehouse in SoMa. Built in 1905 the heavy timber-frame and brick building was converted to office use in the late 1990s and is now occupied by Adobe.⁵²

While plans for Transbay and SoMa materialize, the city's remaining industrial zones must now accommodate similar companies such as Zynga, Yammer, and Dropbox. As competition for buildings in the areas covered by the Eastern Neighborhoods Plan has intensified, rents have grown, resulting in commercial leasing rates that are now higher south of Market Street than in the historically pricier Financial District.⁵³

It does not take an exhausting list of references to understand that high-tech office users can afford to pay more for space than most manufacturing operations, and that is precisely the point in the city's inequality issue. It is also obvious that the supply of land zoned for industrialized PDR uses is a diminishing resource yet stands to determine future outcomes for the city.



Image_Adobe's main office in San Francisco is in the famous Baker & Hamilton building, a warehouse built a century ago. Adobe Systems Inc. (2000).

2_LITERATURE REVIEW

In the 1990s, San Francisco had 2,781 acres of land or 12.6% of the city's total area zoned for industrial (now PDR) use, but according to the Eastern Neighborhoods Plan, in the near future we will have only around 1,500 acres or 6.8% of the city's total area.⁵⁴ Furthermore, budding craftspeople and manufacturers also understand that while it is possible for office and residential uses to move into industrial zones, it is basically impossible for PDR to move into non-industrially zoned districts.

The Eastern Neighborhoods Plan will preserve only about half the area currently zoned for industrial and PDR uses, it is important to acknowledge that market forces have already eradicated SoMa's Transbay, Mission Bay, the Central Waterfront including Pier 70. For the last 10 to 15 years, these areas have been changing and have seen growing land use conflicts. It is naive to think that Bayview stands to be immune from such transformations, but all signs point to it becoming the next transformative area in San Francisco.



Image_ Proposed Dropbox Headquarters expansion. Kilroy Realty (2014).

A diverse economy is one hallmark of a healthy city. Other places such as Detroit or Las Vegas are prone to drastic shifts in the economy because of their over-reliance on a single industry. With the rising cost of doing business abroad, there is a real future for domestic manufacturing in the United States, Bay Area, San Francisco, and Bayview.

San Francisco must come to an understanding that the entire region still faces a chronic housing shortage and huge housing/jobs imbalance. Bayview's surrounding PDR areas are ground zero for plans that will triple the population and double the number of homes, forever changing the face of San Francisco with construction already underway at the Hunters Point Shipyard. Critics fear that this type of development will accelerate what has been a steady exodus of African-American residents.⁵⁵ 85 percent of the 10,500 homes that Lennar plans to develop won't be affordable to the elderly, disabled, unemployed and low-to-middle income people who currently live in the Bayview.⁵⁶

San Francisco's rising status and influence in a prospering region infer a kind of promise or hope that's increasingly enlisted to solve societal problems, so long as it conforms to esoteric interests and standards. The city's industrial legacy are predominantly found around Bayview and offer an opportunity to revisit district-scale strategies by comparing the varying qualities of urban development within its imminent transformation. In a time where advancing technology has become a tool for investment and ratification, today's metrics and indices have also begun to imprint new opportunities for the collation and cognition of social and spatial externalities. A pattern of shortcomings and costly oversights within economic and technological opportunism expressed in the literature review begin to unveil



Image_ Pier 70 redevelopment: aerial view of development concept. Brick Architecture (2013).

CASE STUDY

The long-abandoned 1883 Union Iron Works machine shop has been designated as a "New American Workplace" where designers, manufacturers, artisans and craftspeople, and others would work together under one building. This facility would be located across the street from the American Industrial Center and provides one of the few opportunities to become a center of local craft-based industries.

Additionally, Pier 70 is a development project which includes nine story buildings and is part of a larger development project, was also developed to produce office space and buildings for retailers, artists and manufacturers and nine acres of new parks.



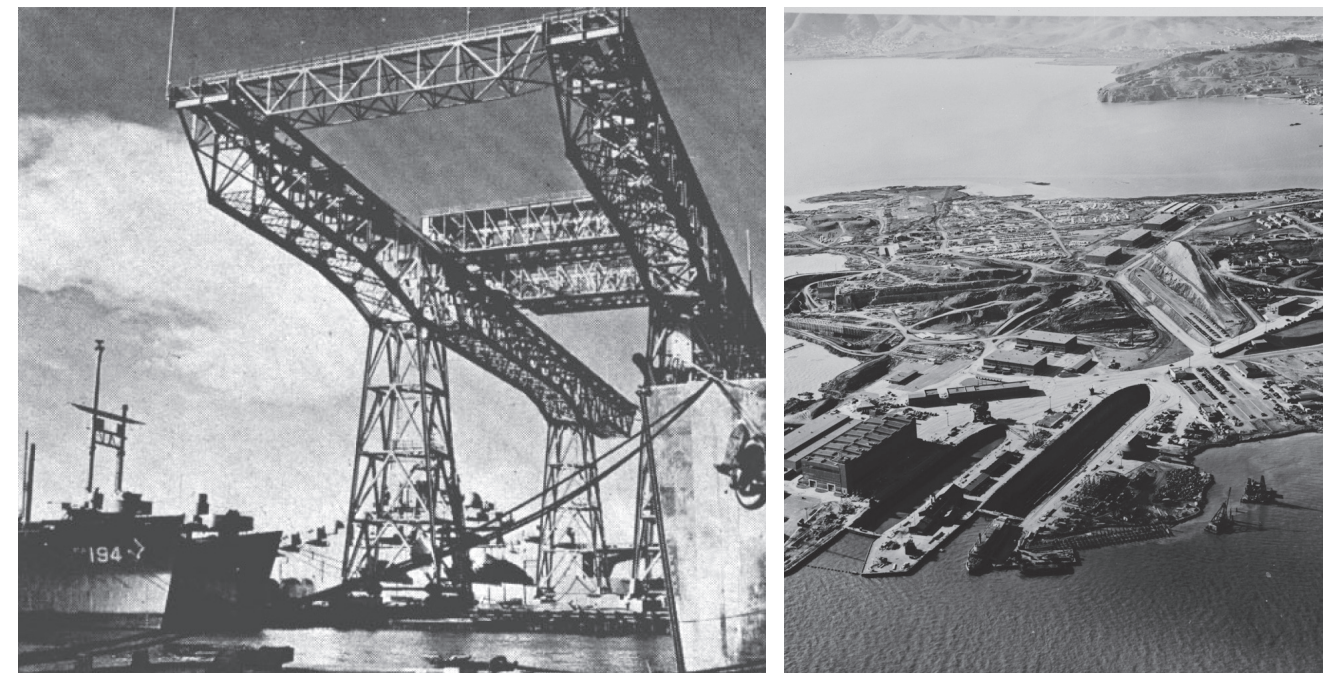
Image_Proposed High-Tech Innovation Center at the Hunters Point Shipyard. Lennar Urban (2012).

CASE STUDY

Affordability is a major concern with this project as prices are set to begin in the low \$500,000s for one bedroom, and the high \$550,000s for two bedroom homes. If all goes according to plan, the first 247 market rate and affordable units will be ready for move-ins by this fall with an additional 3,000 units coming in the next five years.

Additionally, the Lennar development slated for Hunters Point changed its name to The Shipyard, probably to avoid negative connotations associated with adverse environmental conditions such as water contamination, radioactive leakage, and the presence of numerous heavy metals in the water and soil.

the proposed progress and reality regarding the intensifying effects of San Francisco's development policies.



Images_ At its peak in the 1940s, the Hunters Point Naval Shipyard employed up to 17,000 people. U.S. Navy LOC, HAER CAL,38-SANFRA,195A-3 (1941)

2_LITERATURE REVIEW

THE EVOLUTION OF 'INDUSTRIAL'

Nearly a decade ago, a citywide summit on industrial land use was convened and attended by more than two hundred people. The San Francisco Planning Department personnel held informational meetings, opened their offices to the general public, and conducted several open community workshops in affected neighborhoods including East SoMa including parts of Transbay, The Mission District, Showplace Square, Potrero Hill, Visitacion Valley, and Bayview. The result was a final draft proposal for a comprehensive rezoning of the city's Eastern Neighborhoods.⁵⁷

San Francisco originally pushed for large areas of the Eastern Neighborhoods to be zoned PDR which are strictly off limits to housing. While most organizations agree that there is a need for such activities many groups are not convinced that they got the mix right and that too much land was zoned for industries that already left the city. One council member noted, "zoning so much land for PDR is like zoning for gold mines, its nothing more than naive wishful thinking."⁵⁸

The basic premise of the Eastern Neighborhoods Plan is to retain a reservoir of industrially-zoned land in the city. What has been overlooked is that PDR classification casts an extremely wide net across

a variety of sectors and does not distinguish between different types of production, distribution, repair and other manufacturing or industrial related activities.

Based on several years of community input and technical analysis, the Eastern Neighborhoods Program calls for transitioning about half of the existing industrial areas in these four neighborhoods to mixed use zones that encourage new housing. For reasons that remain unclear, Bayview has not been included in the Eastern Neighborhoods Plan despite coming under immense pressure to solve housing, transportation, community facilities, and its own social services needs.

Bayview fulfills most of David Hojnacki's criteria as an 'emergent neighborhood', based on its large size, diverse social character, socially segregated interaction, and ambiguous boundaries as shown in Figure 14. Instability and unrest can be applied to it and more directly to PDR industries because they are both very much still forming. A change in complexion often lead to heated disputes when revised, leaving profit-driven developers and activists to fight it out their own sense of future.

HOJNACKI'S NEIGHBORHOOD TYPES MATRIX

Basic Elements of Communities	Emergent	Intermediate	Traditional
Area Size	Very Large	Smallest	Small
Social Character	Diverse	Homogeneous	Homogeneous
Area Boundaries	No Common Boundaries	N/A	Clearly Defined
Internal Threat	N/A	Low Threat	High Threat
Future Satisfaction	High Optimism	Low Optimism	Moderate
Neighborhood Organizations	None	Some	Many
Sub-Group Interaction	Limited	Little	Organized

Characteristics that describe Bayview in Comparison to other Districts.

Figure 14_ Communities within Cities. David Hojnacki (2001).

ASSESSMENT OF PDR EMPLOYMENT SECTORS

PDR land use continues to decline, however San Francisco's industrial jobs have grown 14 percent since 2011, employing 9,665 in the city of 837,442.⁶⁰ While encouraging, lines have been blurred as to what constitutes as a 'PDR' or 'industrial' job growth.

For example, an in-house software programmer that is employed at a 3D printing manufacturer or distributor—can be classified as PDR despite that position needed an entirely different set of skills.

Why does PDR need an updated definition?

- **Competition for Land:** San Francisco has limited land and allows almost any activity in an industrial zones. Residential and office uses can afford to pay more to buy land. This is primarily how other uses gradually displace PDR activities.
- **Land Use Conflicts:** Some PDR businesses use large trucks, have off-business hours, are loud or release odors. This may continue to force PDR businesses to mitigate the impact of their operations to accommodate other uses or even leave the city.

SFMade is an organization that believes a newfound industrial-focused strategy can improve economic opportunities and establish clear pathways for low and middle-income workers by advocating for a range of companies that create, design, and manufacture things in San Francisco. This includes—but is not limited to—bicycles, apparel, personal products, food, beverages, furniture, jewelry, pet products, and other media products. While the cost of doing business are higher in San Francisco than in the suburbs or overseas, some entrepreneurs have realized

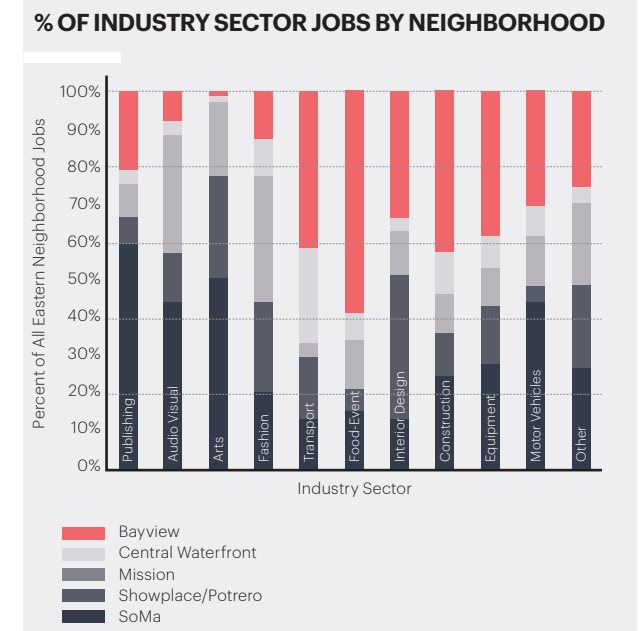


Figure 15_ San Francisco Economic Report. City & County of San Francisco: San Francisco Planning Department (2012).

the value added cachet of being "Made in San Francisco". More recently, people want to be more in touch with production, process, and people who make the products. As consumers become more selective in their consumer habits, the desire to share values and authenticity comes at a premium.⁶¹

Advances to PDR because of SFMade are promising. Moving beyond an artisanal class of people frequently labeled as hackers, makers, or tinkerers, there's a whole other world of production and manufacturing that is left uncharted and infrequently discussed. The smart growth movement is associated with 'creative class' of economic development strategies that favor engineering firms, universities, and medical/pharmaceutical research firms over many PDR businesses and largely explains why Mission Bay was left out of the Eastern Neighborhoods plan.⁶² These strategies are seen to promote advanced



WHAT IS THE VALUE OF PDR?

PDR AT A GLANCE

The San Francisco Planning Department has adopted the term **Production, Distribution and Repair or PDR** to refer to the very wide variety of activities which have traditionally occurred and still occur in its industrially zoned areas. The intent of these districts is to ensure space for existing and new PDR businesses and activities.

Some residents have been concerned that the city is trying to preserve old-fashioned industries which enlies an issue of identity.

PDR idealistically are businesses and workers that prepare food and print books; produce the sounds and images of movies; set theatrical stages; build houses and offices; deliver mail; and pick up garbage.

In general, PDR businesses tend to provide stable and well-paying jobs for the 50% of San Francisco residents who do not have a college degree. Another underrecognized potential is that manufacturing is one of the nation's principal sources for research and development (R&D) innovation.

knowledge-intensive economic development.

The shift in thinking about contemporary industry began a revision of the language used to describe it. In 2002 San Francisco replaced 'industrial' with the phrase 'production, distribution, and repair' in planning and policy documents. This language is not only a strategy to distance modernized industry from the public's negative perception of its historical predecessors, but it also 'highlights possibilities for other planning approaches that are 'more contextual' and integrative. A list of PDR employment sectors are shown in Figure 16.

Some cities have adopted San Francisco's PDR terminology like Boston ('backstreet' businesses), and San Jose ('driving industries'). They have created their own conceptualizations of structure. The traditional term 'industrial' is often used as a consistent and recognizable catch-all for non-residential and non-commercial activities.⁶³

The logical move is to gradually phase out production and manufacturing land use, jobs, and activity because numerous printing, publishing, and manufacturing jobs have declined (see Figure 19), however upon closer inspection there is rising demand for other types of STEM workers in today's industrial workforce. Manufacturing jobs have a wage premium that is typically attributed to higher levels of unionization. Another reason for the premium is that 30% of manufacturing jobs are STEM (science, technology, engineering, and math) fields. These jobs have an average salary of \$53,000 opposed to a retail job at \$32,000.⁶⁴

Planners and designers in partnership with educators, policy makers, and economic developers can work to bridge this gap in awareness by positioning PDR jobs as a viable route to the middle class (see Figure 21). The democratization of production and manufacturing are already rewriting the rules of mass production. The previous decades of industry were driven

EDUCATIONAL REQUIREMENTS

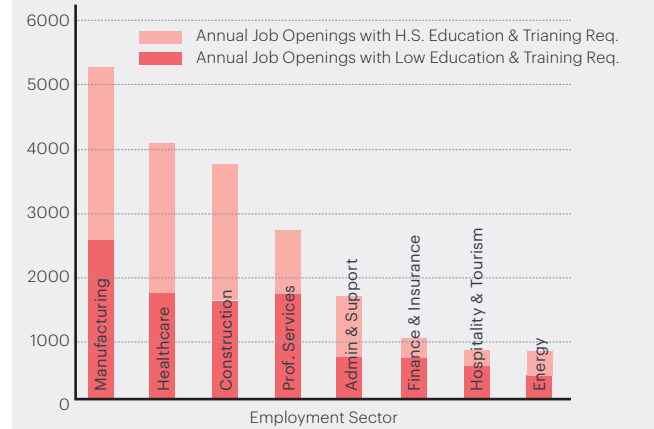


Figure 16_ Source here

% JOB DENSITY BY NEIGHBORHOOD

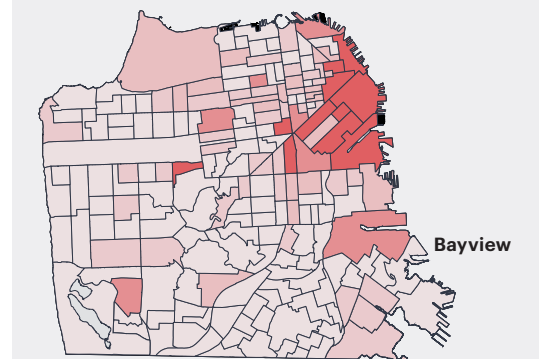


Figure 17_ Source here

ADULTS 25 YEARS & OLDER WITH H.S. DIPLOMA/ OR EQUIVALENT

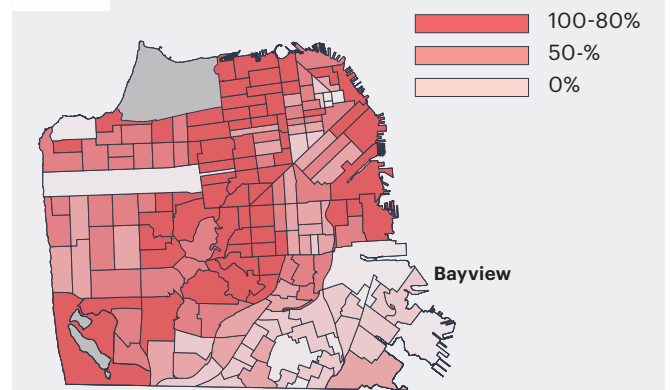


Figure 18_ Source here

2_LITERATURE REVIEW

EMPLOYMENT BY COMMERCE & INDUSTRY DISTRICT AND LAND USE CATEGORY 2012

C&I District	Office	Retail	PDR	Hotel	CIE	Pvt HH
Bayview	2,242	2,455	11,269	8	1,079	1,061
Civic Center	14,047	8,503	1,018	4,903	14,120	1,511
Financial	123,272	18,482	20,772	5,865	13,632	1,638
Mission	3,180	6,298	2,756	40	4,205	1,256
North Beach	3,023	7,612	1,646	1,250	2,904	1,415
North Central	4,781	12,205	1,302	575	42,780	2,445
Northwest	4,033	5,828	2,598	38	10,756	2,051
South of Market	56,713	21,571	27,464	3,560	18,917	2,290
Southwest	7,352	13,912	3,952	84	16,559	5,603
Van Ness	4,160	6,264	937	866	5,905	1,497

Figure 18_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

PDR ESTABLISHMENTS BY INDUSTRY GROUP, 2003-2012

Industry Group	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Construction	1,697	1,678	1,647	1,708	1,687	1,676	1,641	1,598	1,538	1,515
Transportation	544	517	527	502	494	503	418	417	398	400
Utilities	23	26	26	25	26	25	22	25	31	36
Information	213	202	185	187	249	249	247	240	230	229
Wholesale	1,322	1,296	1,255	1,293	1,295	1,302	1,253	1,210	1,178	1,196
Food Manufacturing	168	160	155	152	147	143	140	144	146	157
Apparel Manufacturing	242	226	206	179	168	163	155	146	141	133
Printing & Publishing	424	406	376	358	358	343	342	328	324	338
Other Manufacturing	490	468	450	446	416	410	500	506	499	495

Figure 19_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

OFFICE EMPLOYMENT BY INDUSTRY GROUP, 2003-2012

Industry Group	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Agriculture	404	385	228	241	220	251	330	357	272	184
Finance	35,314	33,748	33,554	34,239	34,975	33,033	30,313	28,742	28,316	29,048
Insurance	12,897	12,527	12,174	11,962	12,249	12,003	10,799	9,796	9,729	9,512
Real Estate	10,177	9,910	10,033	10,316	10,704	10,739	10,146	10,206	10,126	10,554
Office Services	109,970	104,611	108,312	118,328	124,973	128,754	123,917	125,641	135,363	148,682
Public Administration	32,718	31,635	29,834	29,339	31,490	35,458	36,380	36,308	35,032	33,928

Figure 20_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

ANNUAL WAGES PER WORKING BY LAND USE CATEGORY, 2003-2012

Land Use Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Office	\$104,277	\$109,947	\$116,276	\$123,571	\$127,696	\$124,205	\$116,954	\$119,948	\$125,437	\$124,680
Retail	\$33,827	\$33,812	\$34,986	\$34,293	\$34,826	\$33,626	\$32,824	\$33,702	\$34,023	\$34,225
PDR	\$72,085	\$75,143	\$77,489	\$80,672	\$82,753	\$80,251	\$82,095	\$84,734	\$85,121	\$90,597
Hotel	\$37,675	\$38,975	\$39,352	\$40,272	\$41,000	\$42,125	\$41,644	\$41,474	\$42,516	\$42,560
CIE	\$52,794	\$52,367	\$54,297	\$55,943	\$55,867	\$55,557	\$62,022	\$62,954	\$62,545	\$63,275
Pvt HHs	-	-	-	-	-	-	\$20,615	\$16,720	\$14,550	\$13,246
Average	\$71,747	\$73,668	\$77,139	\$81,212	\$83,355	\$81,641	\$81,562	\$83,469	\$82,861	\$83,570

Figure 21_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

by the economics of price and its probable that the next several decades will be driven by the economics of time. Short supply chains are more sustainable, efficient, and desirable. Bayview is in a prime location to provide many of these services.

ASSESSMENT OF PDR LAND USE

In the late-90s to mid-2000s, most of California's traditional industrial zones were still defined by the M zoning for manufacturing, which was intended for industrial uses. Its rules and regulations were relatively flexible and allowed many other uses, such as live-work lofts and dot-com businesses that often presented themselves as "light industrial" and "business services." These types of businesses began moving into lower rent areas and driving up land prices.⁶⁵

Existing PDR uses employ many immigrants and people with limited educational attainment. This was a big part of why people in local organizations such as PODER, MEDA, DSCS, and CCHO pushed for the retention of PDR uses through the 8-year Eastern Neighborhoods rezoning process in the first place.⁶⁶

The original intention of the Eastern Neighborhoods PDR policy was to identify certain transitional areas of industrial zones, and to allow those higher intensity uses that would knowingly drive up land prices. This resulted in the new "mixed-use" zones from former industrial areas, with become a huge point of interest to developers with a demand for their office and residential proposals.

It became increasingly difficult to create controls around remaining industrial and PDR uses. Allowing some creativity for PDR uses and bonuses for developers might create other advantages, such as the new IPDR category that allowed up to 2/3 office in exchange for certain

NAICS PDR EMPLOYMENT SECTORS

Construction	236-238
Transportation & Warehousing	488
	485, 487
	484, 492-493
	491
	481, 483
	486
Utilities	221
	562
Information	515
	517
Wholesale	423-425
Food Manufacturing	311-312
Apparel Manufacturing	313-315
Printing and Publishing	323, 511
Other Manufacturing	321-322, 337
	324-325
	316, 326-327
	331-333
	334-335
	336
Transp equip, building supplies	336, 339, 444
Film & sound recording	512

Figure 22_ Production, Distribution, and Repair in San Francisco. San Francisco Planning Department (2014)

ESTABLISHMENTS BY COMMERCE & INDUSTRY DISTRICT AND SIZE CLASS, 2012

C&I District	Number of Employees									
	0-4	5-9	10-19	20-49	50-99	100-249	250-499	500-999	1000+	
Bayview	1,767	253	203	109	40	23	2	0	1	
Civic Center	2,681	372	290	218	70	32	11	4	4	
Financial	5,133	1,500	1,096	892	369	224	65	28	13	
Mission	2,393	349	209	118	34	16	2	1	0	
North Beach	2,223	263	179	117	34	21	4	1	0	
North Central	4,258	535	365	214	59	31	3	4	7	
Northwest	3,302	378	254	113	25	18	9	2	2	
South of Market	4,735	873	748	499	186	120	35	15	14	
Southwest	10,241	995	576	311	80	31	8	3	1	
Van Ness	68	2	4	2	0	1	1	0	0	
Treasure Island	1,443	107	76	59	19	16	2	2	0	
Unclassified	2,602	285	189	118	32	21	5	1	1	

Figure 23_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

"disadvantaged" workforce hiring policies.⁶⁷ Another adverse effect was allowing PDR parking lots for increased height. This stipulation was not realistic for industrial developers, but brought caught the attention of the landowners and commercial developers.

San Francisco is seeing its remaining PDR buildings at capacity. The rapid conversion of industrialized PDR spaces allowed by planning policies of the last decade has already decided much of the fate other eastern neighborhoods with the exception of Bayview, but San Francisco

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can't escape the simple fact that neither the Planning Department or Office of Economic and Workforce Development (OEWD) have the best track record in promoting industrial and PDR uses. As the city considers additional ideas about modifying the city's limited remaining PDR land, office/tech sites appear to be appropriate to the economic reality of primarily concrete industrial buildings, the thinking here seems to be allowing tilt-up concrete building on the back of a site, and a five story tech office building along a new green street that achieves a 1/3 PDR to 2/3 office mix.⁶⁸

Combining the largest 16 parcels covers over 2 Million square feet of PDR uses. 1.5 Million of those would be in the area near 3rd Street Leaving PDR largely undefined may leave it open to political re-definitions when it becomes most convenient. Even with the creation of new PDR spaces, the city has no plan to guarantee that these will actually be affordable spaces, at approximately the \$1.25 to \$1.50/sf current PDR companies can afford.⁶⁹

The city's proposed zoning has no guarantee that the PDR space will be affordable, conduct local hiring, training, or job placement from Bayview's local schools, colleges, workforce development, or entrepreneurship programs. OEWD along with SFMade present a compelling yet largely hypothetical business plan, that any site developer would work out for future PDR users.⁷⁰

Needless to say, the city needs much harder assurances that benefits Bayview and PDR interests. Existing ordinances puts a huge amount of stress on obtaining credit for these types of projects because they are discretionary.

The planning commission considers the viability of the new PDR space created by development, including such factors as whether the project sponsor has developed a PDR business plan, has the commitments of established PDR tenants, and/or a demonstrated relationship with organizations established in the PDR community. This relationship needs to be further articulated and specifically include workforce development and economic development organizations, industrial and entrepreneurship programs such as City College (located in Bayview) or local high schools.

Most Eastern Neighborhood plans call for redesigning portions of land formerly zoned primarily for industrial uses as mixed use. Two affordable housing zones were designated in which a higher percentage of the fees collected by the city would be dedicated to subsidize affordable housing production. Incentives were created to encourage developers to meet affordability requirements through land dedication to the city to provide more housing for people whose incomes were less than 80 percent of the area's median.⁷¹ Land area dedicated to light industry would decrease by approximately 2 million square feet, and approximately seventy-five hundred to ten thousand units of new housing could potentially be built.⁷³ Activists not in favor with the plan as approved by the Planning Commission, focused their energies on securing final revisions in a hearing before the Board of Supervisors.⁷² Various revisions and amendments were recommended, and the board eventually adopted the Eastern Neighborhoods plan in December 2009.⁷⁴

INDUSTRIAL LAND CIRCA 1970

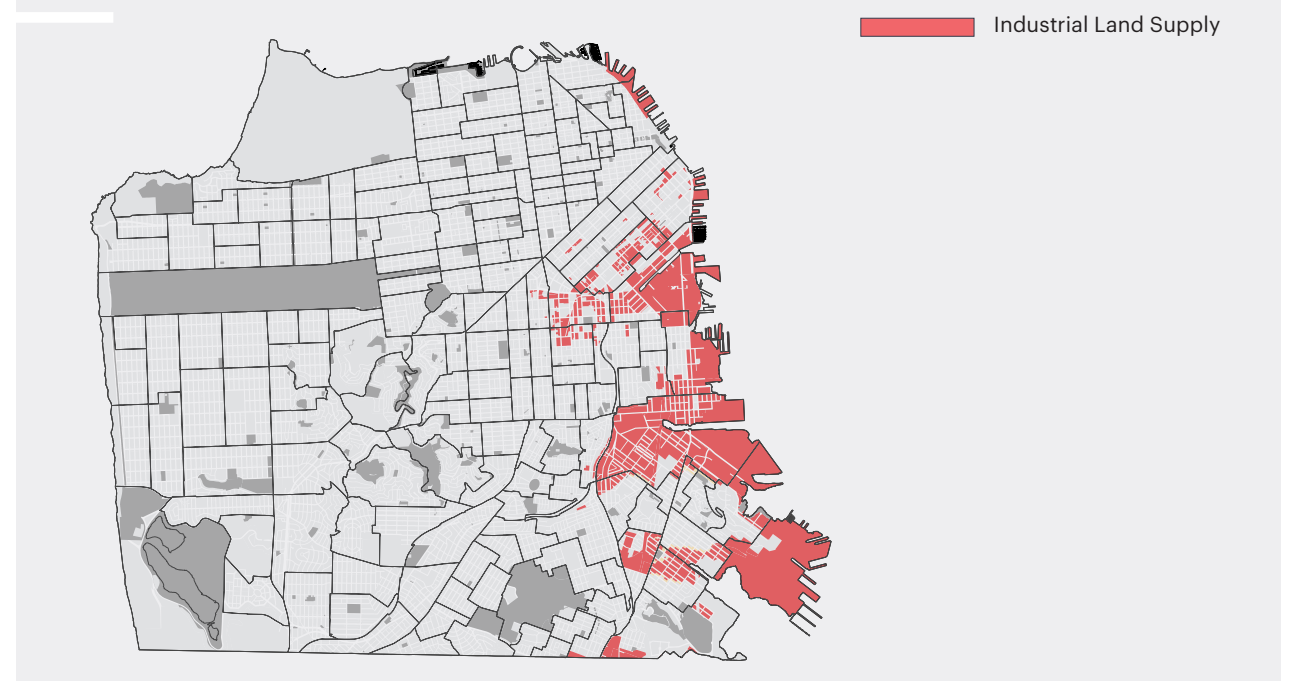


Figure 24_ Supply/Demand Study for PDR in San Francisco's Eastern Neighborhoods. Economic & Planning Systems prepared for the City & County of San Francisco (2005).

INDUSTRIAL LAND CIRCA 1999

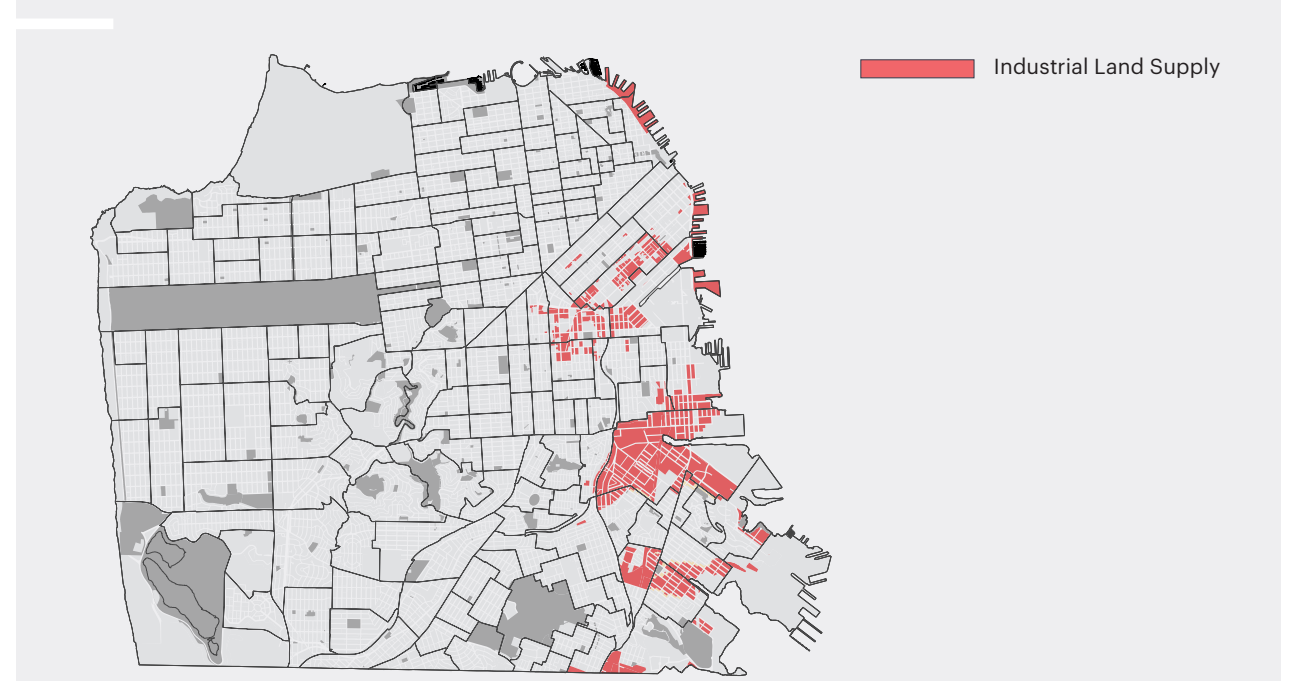


Figure 25_ Supply/Demand Study for PDR in San Francisco's Eastern Neighborhoods. Economic & Planning Systems prepared for the City & County of San Francisco (2005).

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ESTABLISHMENTS BY COMMERCE & INDUSTRY DISTRICT AND LAND USE CATEGORY, 2012

Number of Establishments	C&I District	Office	Retail	PDR	Hotel	CIE	Pvt HHs
Bayview		159	230	610	2	83	1,314
Civic Center		873	461	96	66	319	1,867
Financial		4,824	1,205	715	46	864	1,666
Mission		436	560	273	11	296	1,546
North Beach		370	502	140	22	153	1,655
North Central		824	938	236	42	684	2,752
Northwest		531	530	278	6	486	2,272
South of Market		1,788	1,168	1,060	37	462	2,711
Southwest		1,268	1,392	838	20	1,172	7,556
Van Ness		512	522	100	39	324	1,757
Treasure Island		7	3	5	0	7	56
Unclassified		346	155	149	6	80	988

Note:

PDR = Production/Distribution/Repair

OE = Cultural/Institutional/Educational

Treasure Island added in 2010.

Other = non-classified economic activity under NAICS.

Tables 4.2.1-4.2.4 provide detailed information of various components of Office, Retail, Industrial, and CIE, respectively.

Source:

California Employment Development Department

Data not publicly available

Additional calculations by the San Francisco Planning Department

Figure 26_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

ESTABLISHMENTS BY LAND USE CATEGORY, 2003-2012

Land Use Category	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Office	11,314	10,983	10,778	11,280	11,179	11,292	11,419	11,430	11,511	11,938
Retail	7,761	7,651	7,450	7,517	7,395	7,473	7,496	7,541	7,516	7,666
PDR	5,122	4,984	4,826	4,847	4,839	4,812	4,718	4,614	4,483	4,500
Hotel	339	329	320	311	291	288	292	299	290	297
CIE	3,061	3,145	3,182	3,306	3,383	4,066	4,739	4,794	4,844	4,930
Subtotal	27,597	27,092	26,556	27,261	27,087	27,931	28,664	28,678	28,644	29,331
Pvt HHs	15,675	16,109	16,299	16,929	17,327	20,822	22,864	24,161	26,607	26,140
TOTAL	43,272	43,201	42,855	44,190	44,414	48,753	51,528	52,839	55,251	55,471

Figure 27_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

SAN FRANCISCO EMPLOYMENT BY LAND USE CATEGORY, 2003-2012

Annual Average Number of Jobs	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Office	201,492	193,180	195,521	206,271	214,661	221,250	211,885	211,050	218,837	231,908
Retail	95,599	95,006	96,033	98,294	102,253	103,443	98,278	98,139	100,598	106,305
PDR	93,726	89,037	84,693	81,699	84,986	84,710	76,727	72,967	72,466	75,637
Hotel	17,438	18,090	18,424	19,087	19,070	19,527	17,828	17,568	17,795	17,400
CIE	124,882	127,962	128,726	130,645	135,361	141,848	124,831	126,208	129,015	132,851
Pvt HHs	-	-	-	-	-	-	19,443	19,819	20,327	22,156

Figure 28_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

LAND USE SQUARE FOOTAGE BY PLAN AREA, 2012

Land Area -- Square Footage (000s)	Residential	Mixed Resid	Office	Retail	PDR	CIE	Hotel	Mixed Uses	Public/ OS	Vacant	Other
Balboa	361	192	13	264	63	2,905	0	77	2,532	1,383	0
Bayview	18,186	1,387	1,242	1,692	12,688	8,054	10	5,651	11,884	8,669	479
C-3	199	516	2,948	1,142	263	196	1,198	1,977	307	297	31
Central Waterfront	471	414	354	248	8,601	59	2	1,078	2,895	2,764	2
East Soma	1,477	1,437	1,352	370	1,050	230	61	924	734	1,309	64
Geary	12,513	1,036	183	917	130	2,758	77	963	833	414	113
Hunters Point Shipyard	0	0	0	0	18,142	976	0	0	0	2,619	0
Market/Octavia	5,110	1,086	676	737	425	990	78	445	573	814	10
Mid-Market	311	83	658	228	167	67	142	252	0	423	0
Mission	12,061	2,134	618	1,453	2,752	2,041	71	1,830	638	956	138
Mission Bay	3,440	344	152	198	426	793	0	254	268	5,483	165
Presidio	51	0	0	0	0	0	0	0	65,584	70	0
Rest of the City	350,402	15,683	4,704	7,353	6,548	51,375	2,147	7,829	201,122	19,510	2,909
Rincon Hill	273	376	280	50	29	188	0	56	7	374	0
Showplace Sq/Potrero Hill	7,990	849	682	613	2,042	1,782	0	1,815	683	3,374	53
Transbay	77	22	510	126	38	16	19	138	0	823	0
Van Ness	745	538	178	354	293	235	237	351	0	78	0
Visitacion Valley	8,453	149	281	107	957	372	0	33	626	769	104
West Soma	1,003	652	657	875	2,335	667	83	1,101	10	1,304	0
Yerba Buena	106	153	173	163	26	230	223	640	330	53	0
Other	0	0	0	0	0	0	0	0	0	0	0

Figure 29_ Commerce & Industry Inventory: Data Tables. San Francisco Planning Department (2013)

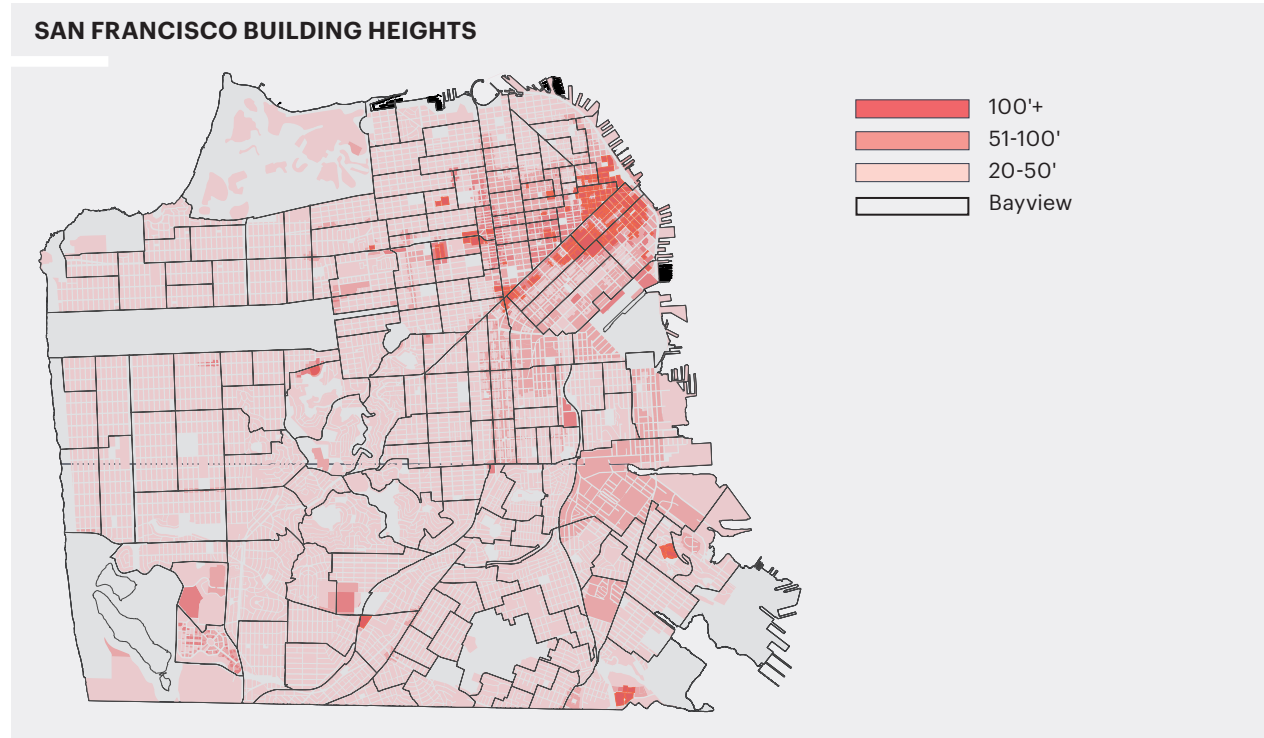


Figure 30_ San Francisco Planning Department (2012)

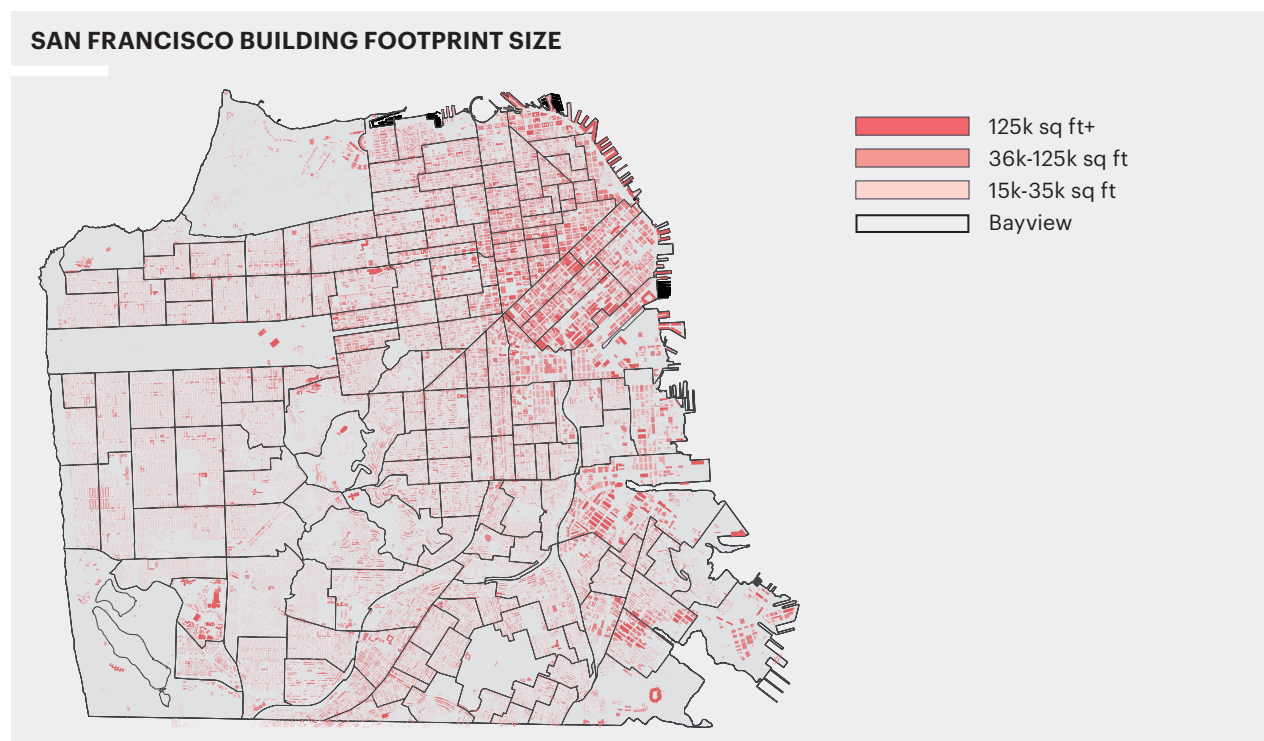


Figure 31_ San Francisco Planning Department (2012)

ASSESSMENT OF PDR URBAN FORM

When architecture and San Francisco are used in the same sentence, it's probable that the gleam of Victorian houses come to mind. Preservation in one respect has made the city walkable, desirable, and unique in that regard. Single-family homes, including ones occupied by dozens of professionals, provide some of that underlying character throughout the city. The exception being places like Downtown, the Financial District, and SoMa where a significant height increase allowance happens. A closer look will reveal Bayview's unique position in the city that accounts for some of the largest building footprint sizes in its PDR districts, but without the height. It's easy to see why the acquisition of a single parcel brings an enormous amount of potential to private interests. A quick comparison in size even within Bayview itself reveal a very polarizing set of experiences when walking through residential or PDR areas.

Allowances for significant height increases are prohibited, yet do offer a potential in which to imagine what it means to include some density that is distinctly PDR, but at the same scale of SoMa.

Overall the Food & Beverage Sector San Francisco is experiencing a surge of interest in developing a more sustainable food system, with food and beverage manufacturing and distribution sectors growing again after many years of decline. As of 2012, San Francisco had 370 Food and Beverage production and distribution firms, employing just over 5,000 workers.⁷⁵



Figure 32_ GIS DataSF.org San Francisco Planning Department

MAKER ORGANIZATIONS



ADDITIONAL CONSIDERATIONS

SPECIAL DISTRICTS

Measuring industrial activity is not easy to quantify as an economic activity because it's measures of output vary from sector-to-sector. Whereas residential or office development can be attributed to simple measures such as FAR. Because of this, other cities around the U.S. have advocated for special districts to mitigate that effect with New York's (IBZ) Industrial Business Zones or Chicago's (PMD) Planned Manufacturing Districts that each provide clustering, branding, and marketing strategies. While goals and purposes vary, there are common themes in terms of providing public services, beautification, and tourism. Washington, D.C. and San Jose found that while the demand for industrial land is not necessarily increasing, the supply is decreasing because of pressure from other types of land uses.⁷⁶

BRANDING & MARKETING

In addition to creating special districts, sometimes additional marketing and branding campaigns are created to increase marketing potential and a greater awareness.

- **Menomonee Valley, Milwaukee, WI**

There are dedicated retail space for manufacturing firms that can sell directly to the public. Harley Davidson anchors the space and provides a clear and distinct identity.

- **Garment District, New York, NY**

New Yorkt was once center of the sugar, meatpacking, and garment world before coming the financial capital. Those legavies have long been gone, but the Garment District has served a pivotal function its fashion industry to this day.

'INDUSTRIAL' VISUAL COMPARISON

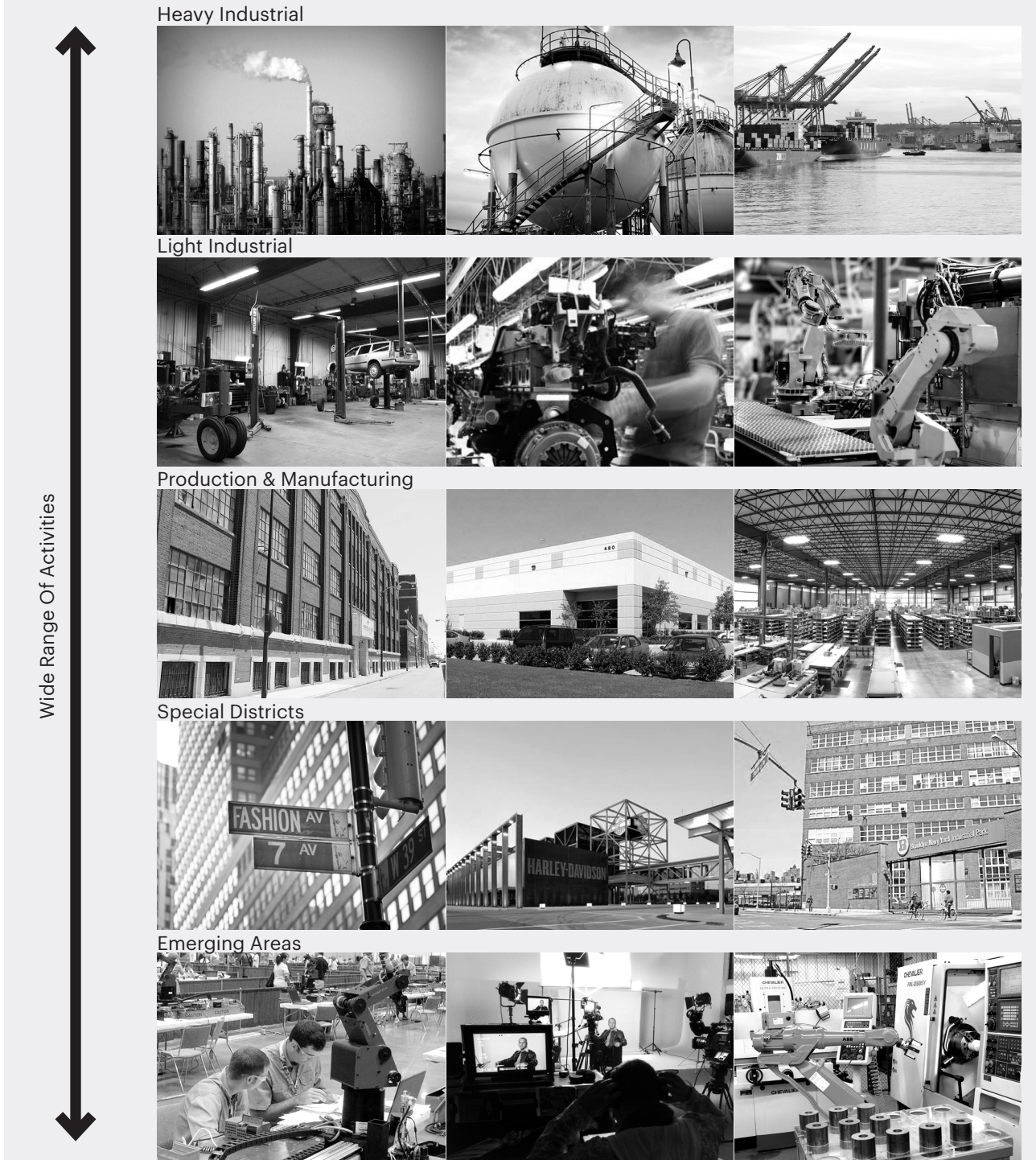


Figure 34_This illustration describes the wide range of activities and uses commonly--and sometimes not so commonly--associated with industrial land use.

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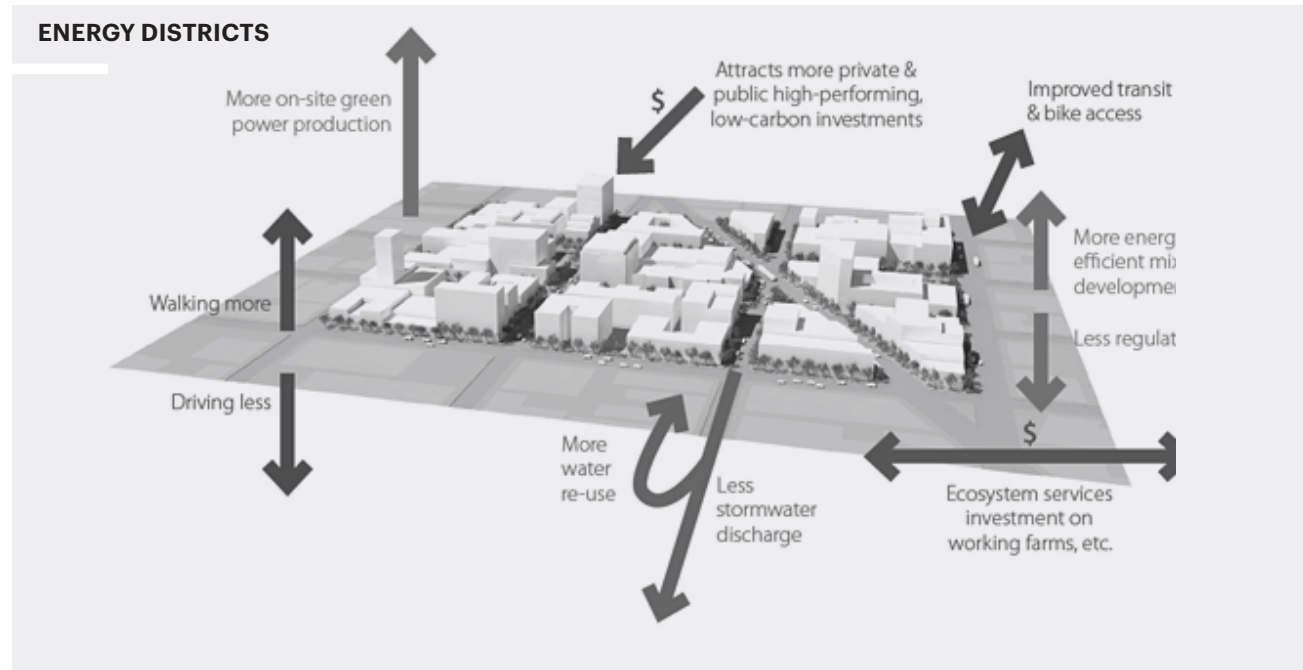


Figure 35_Climate Benefit District. Mithun (2012).

ENERGY

Energy efficiency is one of the most direct ways to save money and provide a very legible value system for residential and commercial buildings. The presence of the U.S. Green Building Council's LEED program has gained significant strides in acceptance and popularity in a short period of time. Nearly half of the efficiency opportunities in commercial buildings can be realized through changes to behavior or equipment operation schedules. That doesn't mean production, manufacturing, and distribution equipment retrofits aren't needed, but it illustrates the relative complexity of savings potential for PDR spaces.

Incentivising something of a PDR energy district wouldn't be nearly as simple as its application to residential or commercial buildings. Generating savings in the industrial sector will take some convincing, particularly for plant managers

and other operators that need to meet their technical challenges without interrupting the flow of production. This may be most applicable for large-scale production, but is still a profound opportunity for consideration in dense urban settings with smaller footprints.

*"There's a myth in the industry that energy efficiency is always easy," said Marcus Wilcox, CEO of Cascade Energy. "Efficiency is in the industrial sector is always more work, and it requires a good amount of experimentation."*⁷⁷

Pacific Northwest-based Cascade Energy has done technical analysis for industrial sites over the last two decades. More recently, the firm developed its own software called Sensei, which focuses on how to modify operations to save energy in industrial facilities.⁷⁸

Other approaches to energy management are created for commercial uses and often fail to provide the diverse functionality needed for the industrial or PDR sector that don't account for the events that can change how equipment is operated.

PDR buildings and landscapes are typically complex where usage patterns are varied and more difficult to produce energy model consumption and analysis, particularly against external factors. In an industrial facility where weather, product variation and constantly changing schedules are the norm, predictions are far more difficult. For example, an SME company may see dramatic changes in energy use day-to-day based on the size, volume, and duration of production.

Ultimately, energy efficiency is a relatively low priority for many industrial companies and part of the problem with its value and perception, particularly in a green economy. The Garment District has capitalized on a clear identity, albeit not one particularly related to fostering or promoting environmental standards. In less cultural entities safety becomes the priority before meeting environmental regulations and productivity. So getting PDR businesses to care about energy use requires more than an 'app' or 'dashboard'.⁷⁹

There is however a distinct relationship between action and measurement of the results, but are often very slow to integrate new processes. Due to the wide range of variables in the industrial environment, savings don't always come as consistently as they often do in the commercial sector. Like any business, companies in the industrial sectors want to know what the savings will be upfront before a project is approved.

Just as the proliferation of data continues to grow, there is a significant relationship between energy savings, creating a digital presence, and integrating PDR into a city than traditional regulations and incentives currently ask for. Efficiency and streamlining operations are a common language that may be used to bridge what are seemingly antiquated processes of the 'physical world'. Energy efficiency is a business decision. No company is going to do industrial energy efficiency because of the way it makes them feel as Specialized Districts do such as the Garment District. Energy alone is not going to be 'the' answer, but can certainly become a significant part of the conversation that marries sustainability and legibility in an increasingly digital world.



Figure 36_Locals & Tourists #3 was created using geolocated data from Flickr and Picasa photos. A Project by Eric Fischer (2010).

SYNTHESIS: CONFRONTING CAPITAL, PLANNING THE FUTURE

Urban theorists and participants have articulated their sense of contradiction when writing about social, economic, or technological qualities. I have found variations in understanding urban development processes, but each does not explore PDR extensively enough to establish its characteristics and thematic significance beyond their own disciplines. Karl Beitel, Christopher VerPlanck, Chester Hartman, Enrico Moretti, David Harvey, and Anthony Townsend do develop a broader symbol extensively, although they differ in their specific concerns and perspectives. Each writer places the urban development at the center of generational argument over the value of past traditions in comparison to greater ambitions. By establishing a close correlation between such writers, we can begin to appreciate the power of both social and economic significance within emergent digital perspectives. This paradigm merits a closer look – first because it is a figure of disconcerting urban development patterns which persists throughout the literature and second, because urban development represents

the ongoing need to dramatize the economic ambitions as caricatures of equity and progress that are so fully immersed in indulgence.

Clay Shirky argues that technology makes people into collaborators and proceeds to make a promise of a better world. He continues to describe the means and motives that require a sort of crowd-sourced opportunity of social production, “people you don’t know, are making your life better for free.”⁸⁰ Nothing could be more true, depending on who you ask. One doesn’t have to look far to see how Wikipedia, AirBnB, or Kickstarter may have benefited some directly. As crowdsourcing becomes ever more popular, it has done little to fund public projects, low-income housing, provide working class jobs, and create other necessities in any urban environment, at least not yet.

Capital accumulation and legitimation of development describe a indistinct pathway toward the future. Thanks to the driving force of the internet, a seemingly endless score of platforms is thought to enable a drastic provision to planning and design. For example, amateur cartographers have begun to reshape and express their own perceptions of place, taking advantage of malleable open-source websites—including Google Maps, Facebook, MapBox and Wikipedia—to provide their own definitions for where, for instance, a particular neighborhood ends and where one begins. Places are increasingly being reshaped and renamed by residents and by developers. This exemplifies a great opportunity for engagement, albeit a very complex one, to align participation as a resource for change that bridges data, information, and social trends as a tool that compliments systematic and transient urban qualities that are not easily recognized, represented, or understood.

ODDS OF UPWARD MOBILITY 2000-2010

Rank	City	Odds of Reaching Top Fifth Starting from Bottom Fifth
1	San Jose, CA	12.9%
2	San Francisco, CA	12.2%
3	Washington D.C.	11.0%
4	Seattle, WA	10.9%
5	Salt Lake City, UT	10.8%
6	New York, NY	10.5%
7	Boston, MA	10.5%
8	San Diego, CA	10.4%
9	Newark, NJ	10.2%
10	Manchester, NH	10.0%

Figure 11: Brookings Institute

Figure 37_Odds of Upward Mobility (2000-2010). The Brookings Institute (2011).



Figure 38_Proposed Additions to Redevelopment Agency. San Francisco Redevelopment Agency (2008).

There is no shortage of published laments on the changing nature of San Francisco, yet the number of instances where the tech sector flocks to the city and talks of 'community' constantly isolates itself from the urban experience it seemingly couldn't wait to be a part of. It's entirely possible that their irreverence can just as easily lead to the same kind of dull and dehumanizing spaces that emerged from a revolution called Modernism. Engagement is not always social, nor promotes equality, nor are the platforms interconnected. Technology can be great for data processing and automated design, but have limited value for the social life of urban spaces that relate to economically driven ambitions, especially those tied to the physical world such as PDR.

DEFINING BAYVIEW'S LEGACY

Bayview needs to figure out the kind of place it wants to be. Its crossed by two freeways that isolate it from the rest of the city, was historically a dumping zone for decades, and is home to several crumbling housing projects that are in the process of being rebuilt. Effluvia and byproducts have been cited for health and environmental problems in the neighborhood; the Navy closed the shipyard and Naval base in 1994 as part of the Base Realignment and Closure Commission (BRAC); and more recently in 2008, Pacific Gas and Electric Company (PG&E) demolished the Hunters Point Power Plant and began a two-year remediation project to restore the land for residential development.⁸¹

The San Francisco Board of Supervisors finally approved a plan that will allow developers to begin entitling dozens of bottled up projects that may bring 7500 new housing units to the area in the Hunters Point Shipyard development.⁸²

Bayview will see a lot of new housing construction and see new neighborhoods grow out of what are currently vacant lots. Lennar's 703-acre proposal to transform essentially the entire face of southeastern San Francisco is forcing many to search for a new sense of character by sorting through the varied stories, ideals, legalisms and codes of the past. Some have already decided which visions to keep, which to abandon, and which to re-write. Bayview inherits some of the city's biggest environmental and public health challenges, as well as the most potential for development that will determine what kind of city San Francisco becomes. This means that if all the city's plans for housing get approved in the next decade, Bayview will account for 80 percent of residential development citywide, meaning its population could triple, further skewing the district's already shifting values, demographics, and character.

Lennar's ongoing project may solve some of the most pressing affordable housing issues of the city, but there's also an issue of vocal interest groups in this process seeking to protect the remaining vestiges of San Francisco's 19th century industrial blue collar character providing an additional layer of tension, distrust, and angst.

While the Lennar package includes \$5.4 million earmarked for housing programs and \$1.5 million for job training, no decisions have been made on what specific projects will be financed.⁸³ The next chapter aims to evaluate Bayview's PDR identities and foster further dialog in how best to tie job training financing with PDR uses and proposed with conceptual diagramming.

3_METHODODOLOGY

Address	Collector	timestamp	source	lat
OAKDALE AVE	RxM	2015-02-21T02:44:47.683Z	mobile	37.73830203429
NEWCOMB AVE	RxM	2015-02-21T02:46:50.642Z	mobile	37.7385423778
OAKDALE AVE	RxM	2015-02-21T02:48:11.935Z	mobile	37.73870188036
OAKDALE AVE	RxM	2015-02-21T02:49:30.773Z	mobile	37.73894113278
OAKDALE AVE	RxM	2015-02-21T02:50:35.290Z	mobile	37.73942106014
OAKDALE AVE	RxM	2015-02-21T02:53:01.065Z	mobile	37.73935446084
OAKDALE AVE	RxM	2015-02-21T02:53:50.728Z	mobile	37.73939433564
OAKDALE AVE	RxM	2015-02-21T02:54:21.061Z	mobile	37.7394541474
OAKDALE AVE	RxM	2015-02-21T02:55:00.034Z	mobile	37.73959326105
OAKDALE AVE	RxM	2015-02-21T02:56:29.522Z	mobile	37.73996751789
NEWCOMB AVE	RxM	2015-02-21T02:58:26.129Z	mobile	37.73983423150
NEWCOMB AVE	RxM	2015-02-21T03:01:42.709Z	mobile	37.74066581202
NEWCOMB AVE	RxM	2015-02-21T03:02:44.620Z	mobile	37.7404777952
MCKINNON AVE	RxM	2015-02-21T03:04:20.433Z	mobile	37.74018236474
MCKINNON AVE	RxM	2015-02-21T03:06:06.967Z	mobile	37.7399305435
NEWCOMB AVE	RxM	2015-02-21T03:07:49.261Z	mobile	37.73938205163
TOLAND ST	RxM	2015-02-21T03:12:41.693Z	mobile	37.74134495519
UNKNOWN	RxM	2015-02-21T03:15:15.014Z	mobile	37.74212709632
MCKINNON AVE	RxM	2015-02-21T03:16:03.981Z	mobile	37.7424337319
MCKINNON AVE	RxM	2015-02-21T03:19:05.392Z	mobile	37.7424337319
MCKINNON AVE	RxM	2015-02-21T03:18:08.540Z	mobile	37.74262792615
MCKINNON AVE	RxM	2015-02-21T03:20:45.561Z	mobile	37.74288149394
NEWCOMB AVE	RxM	2015-02-21T03:25:03.093Z	mobile	37.74282176658
BARNEVELD AVE	RxM	2015-02-21T03:26:34.748Z	mobile	37.74333334789
OMIS ST	RxM	2015-02-21T03:28:57.162Z	mobile	37.74343304321
MCKINNON AVE	RxM	2015-02-21T03:31:26.121Z	mobile	37.74323794522
MCKINNON AVE	RxM	2015-02-21T03:32:12.693Z	mobile	37.74305371370
BARNEVELD AVE	RxM	2015-02-21T04:02:03.943Z	mobile	37.74323830578
BARNEVELD AVE	RxM	2015-02-21T04:03:42.832Z	mobile	37.74310134639
BARNEVELD AVE	RxM	2015-02-21T04:04:36.595Z	mobile	37.74297269610
BARNEVELD AVE	RxM	2015-02-21T04:06:07.474Z	mobile	37.74283083108

DATA VS. REALITY

Physical inscriptions in the digital era hardly seem like a form of data, yet they are important in describing the essence of a place. Proclamations of data points into a place contain contextual meanings for future actions. Each point can give significant meaning, whether they are created in Esri's GIS or a big data network. 'Identity' and 'Distinction' further describe a means in which to best understand the transformations of Bayview's landscape and built form.

- Evaluating Identity**
 A series of questions was used to evaluate the conditions, qualities, and activities of Bayview's PDR districts and serve as a benchmark to understand its existing context. This is intended to mitigate the lack of data in these areas and serve as a preliminary inventory of information.
- Creating Distinction**
 After evaluating key observations, one subarea was chosen within Bayview to further determine how and where advances in manufacturing and production might inform considerations of new or repurposed buildings and open-space usage by modifying parameters such as a footprint sizes, multi-floor construction build out scenarios, increased density, low-impact development strategies, and shared mechanics for efficient and sustainable space utilization.

This approach aims to inform policy makers, planners, designers, and private enterprise on how industrialized PDR land can be reimaged while bringing forth the relevance of evaluating rapidly changing circumstances and conditions

INPUT CRITERIA

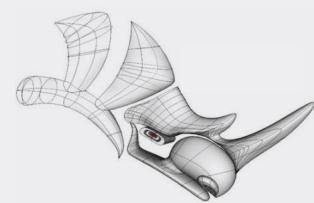
Topic questions revolve around examining negotiated lived experiences, built form, and environmental qualities.

Cloud-based mapping platform in LocalData was used to agument information while out in the field and provide an immediate digital collection of inputs. It's process is illustrated in Figure 39.

DIGITAL TOOLS USED FOR DATA COLLECTION AND SURVEY QUESTIONS



1. LocalData
Cloud-based mapping platform



2. Rhinoceros 3D
CAD modeling software



3. Grasshopper 3D
Generative programming plug-in

1. **Is the site well-maintained or neglected?** Yes/No?
2. **Is the site multi-story?** Yes/No?
3. **Is there an identifiable presence for this building?** Clear Signage/Unique Feature/Other?
4. **What type of building construction is present?** Concrete/Wood/Metal-Siding?
5. **Does the site have:** Greenwalls/Greenroofs/Solar panels/Places to Sit/Street Trees/Bioswales/Bike Racks/Large Windows?
6. **What kind of industrial activities take place:** Production/Distribution/Repair/Combination/Non-PDR
7. **Is the space:** Noisy/Busy/Social/Quiet?
8. **Is there evidence of contamination on the site?** Signs of Spills/Discharges Nearby/Other?

STUDY AREA WHERE DATA WAS SURVEYED

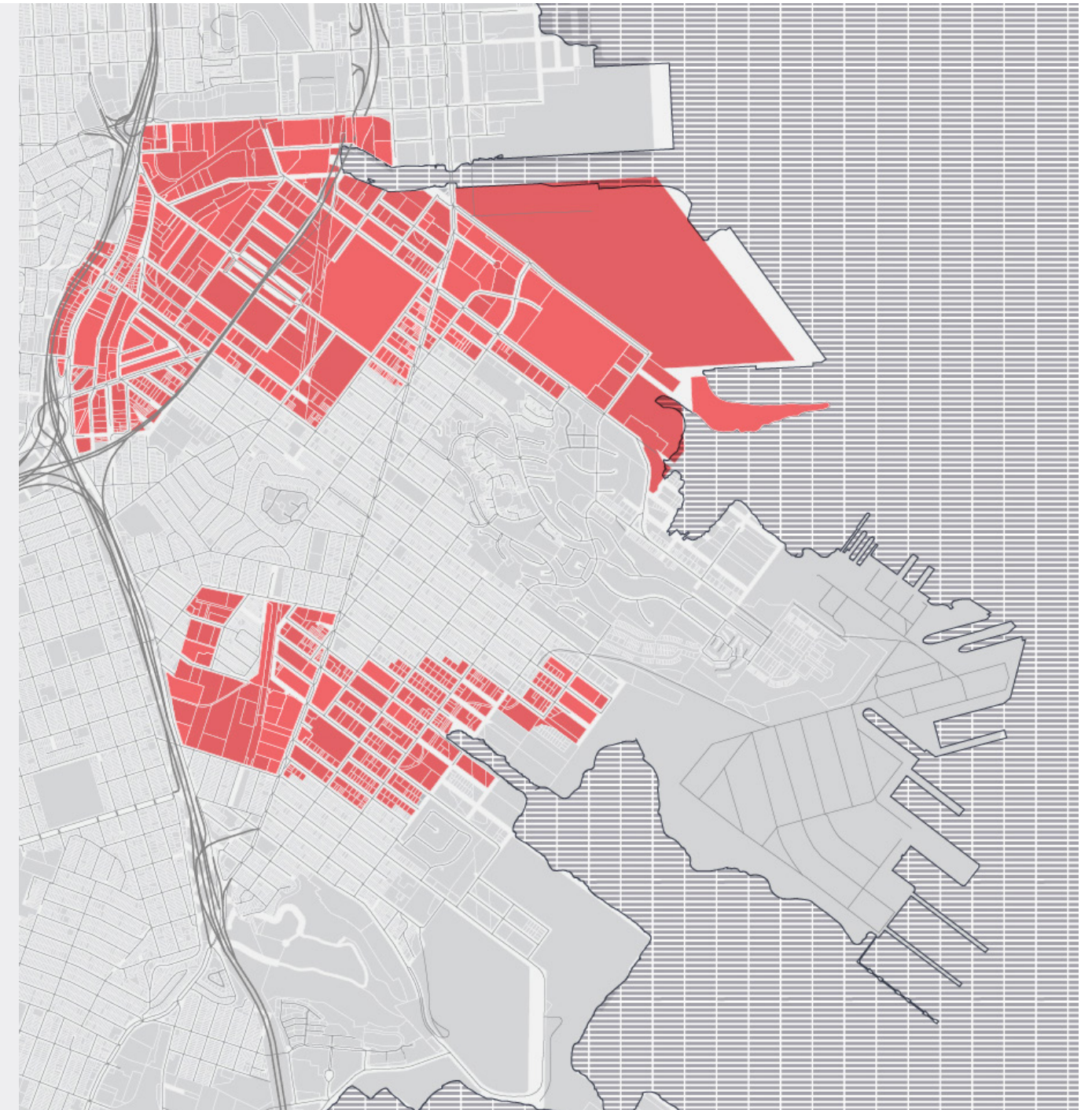


Figure 39_Digital Tools Used in Methodology & Design Intervention

3_METHODODOLOGY

DATA COLLECTION PROCESS

SET UP QUESTIONS

CONDUCT INVENTORY

REVIEW DATA ONLINE

EXPORT DATA

collector	timestamp	source	lat	long	photos	odd_even	to_st
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KM	2015-02-21T04:20:01.9242	mobile	37.7412926961722	-122.401618030813		E	2200
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KM	2015-02-21T04:26:48.0552	mobile	37.7408439272872	-122.400454494174		E	2150
KM	2015-02-21T04:27:37.9072	mobile	37.7405922260191	-122.400010385231		O	2121
KM	2015-02-21T04:28:55.1892	mobile	37.7402914134113	-122.399834160717		E	2100
KM	2015-02-21T04:31:08.2722	mobile	37.7405352940504	-122.399612275917		E	1100
KM	2015-02-21T04:34:27.6092	mobile	37.7378879428787	-122.395603005057		O	1355
KM	2015-02-21T04:35:28.2042	mobile	37.7380910836953	-122.395366100919		O	1313
KM	2015-02-21T04:36:28.5982	mobile				E	0

CREATE GRASSHOPPER DEFINITION TO IMPORT TO RHINO3D

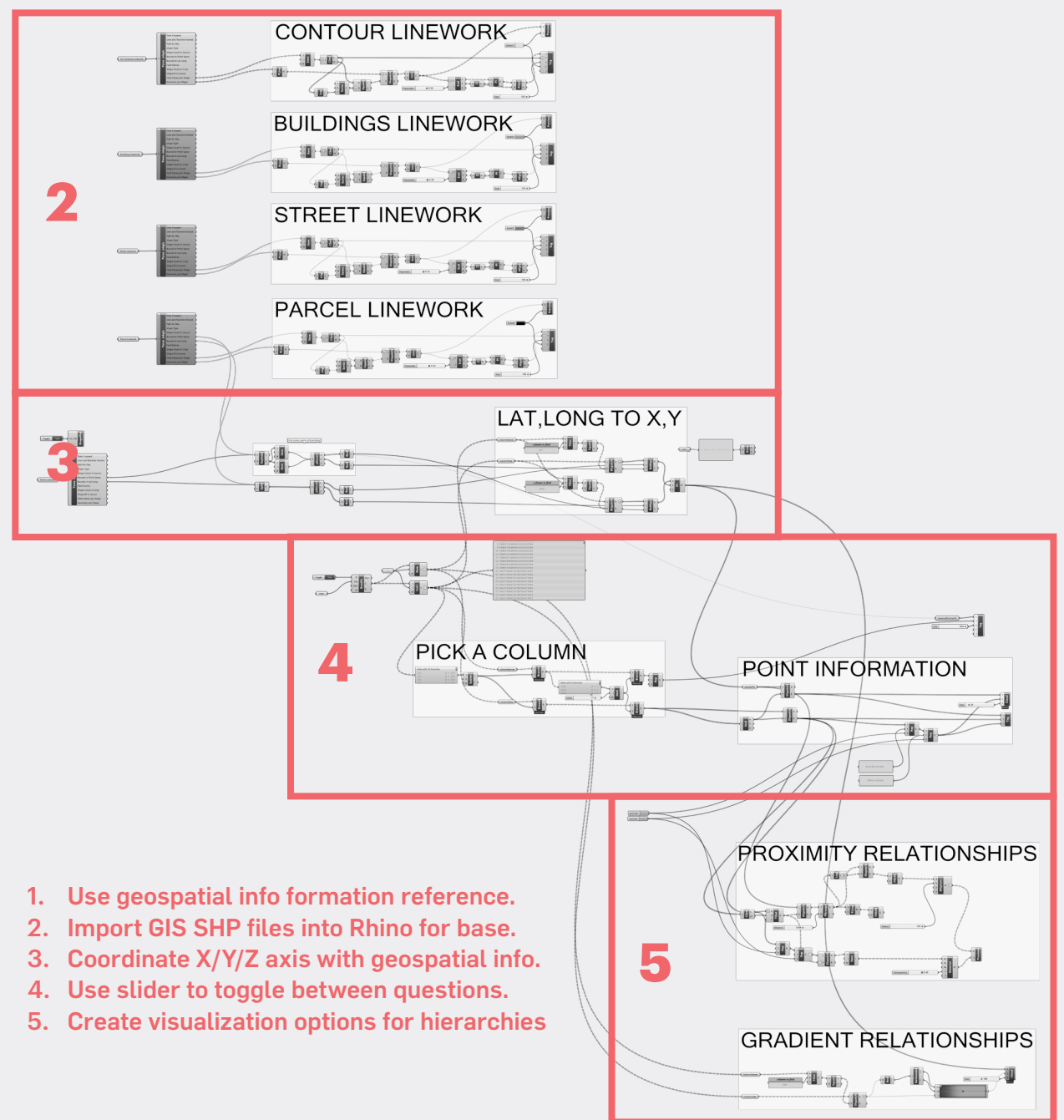


Figure 40_LocalData Workflow Sample

3_METHODODOLOGY

EVALUATING PDR IDENTITIES

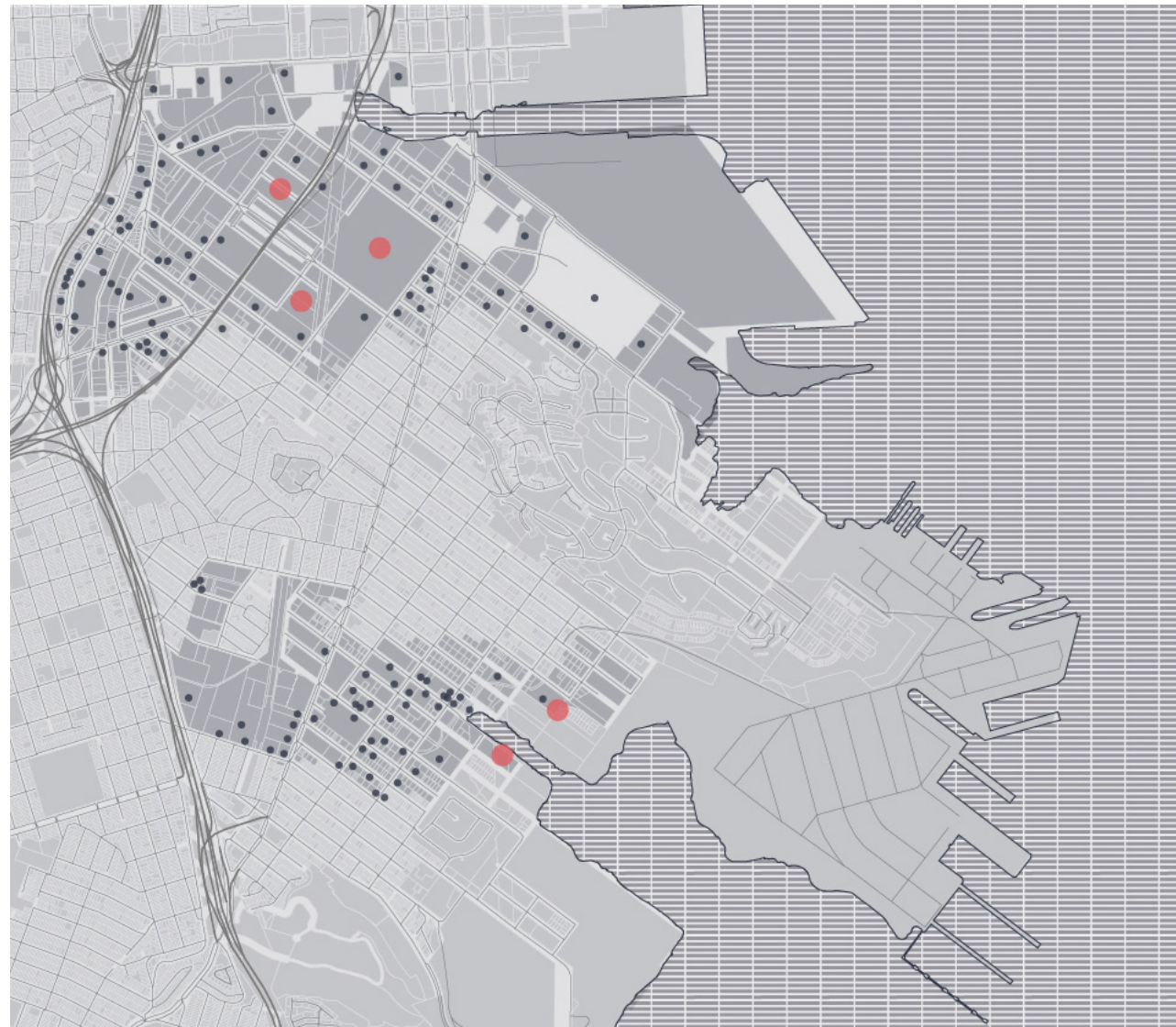


Figure 42_ PDR Identity Data Using LocalData

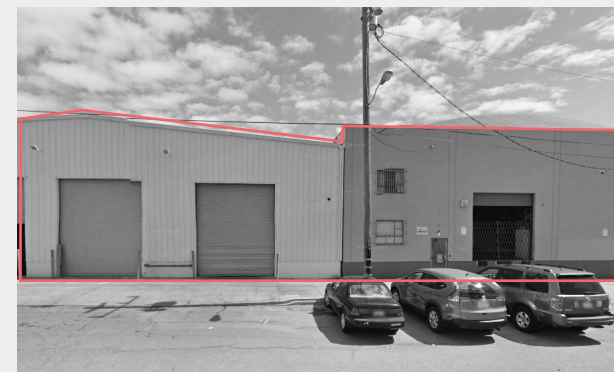
- Large & Unique Structures
- Visible Signage
- Bayview PDR Districts
- Bayview Non-PDR Areas

TOWARDS DISTINCTION



BUSINESS SIGNAGE

Most of the PDR buildings do not include any kind of identification. The exception appeared to highlight large food distribution areas and smaller ethnic businesses. Within this observation a number of signs included dual languages from English to Chinese and Spanish, a reflection of the diverse population in Bayview.



NUMEROUS BLANK FACADES

803 of the 980 buildings surveyed did not include any type of signage.



LARGE & UNIQUE STRUCTURES

While limited, a small amount of notable structures existed in the largest parcels and provided a visual representation into prior uses.

EVALUATING PDR USAGE

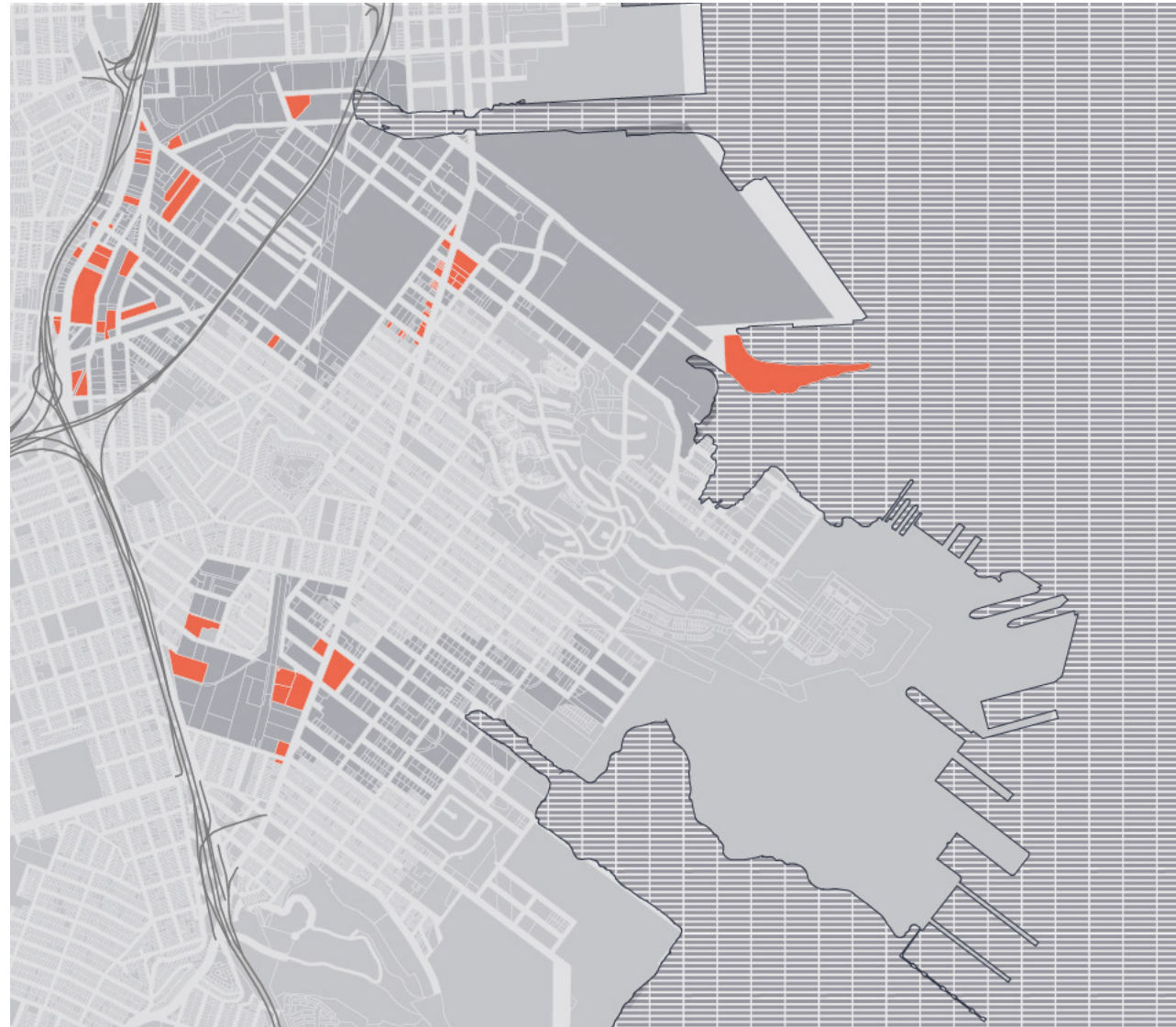


Figure 43_ PDR Usage Data Using LocalData

- Non-PDR Uses
- Bayview PDR Districts
- Bayview Non-PDR Areas

TOWARDS DISTINCTION



CONFLICTING USES

The city does designate certain parcels as PDR buffer areas, however some of those uses come into question when chain restaurants occupy the land instead. Additionally, some businesses are occupied with little buffer to noise and traffic to residential areas.



LIMITED SOCIAL AREAS

Out of all the parcels surveyed, only one bus stop provided any place to sit within the entire PDR district. It was common to find employees sitting on the ground eating their lunch near their place of employment.



INCROACHMENT OF RESIDENTIAL

Large residential condos border the northern edge of Bayview and identify a stark difference in 'PDR' activity.

EVALUATING PDR FEATURES



Figure 44_PDR Features Data Using LocalData

- Presence of Solar Panels, Greenwall/Street Tree
- Visible Signage/Identity

TOWARDS DISTINCTION



STREET TREES

A significant amount of street trees were found in Bayview's industrialized districts, particularly around 3rd Street and 7th Avenue. They do however vary greatly in condition, size, and shape.



GREENWALLS

6 buildings contained some type of green roof.



SOLAR PANELS

9 buildings use solar power (survey done via Google Earth).

4_DESIGN INTERVENTION



CONCEPT DESIGN

History and physical places are typically viewed as the antithesis to the ubiquitous frenzy of technological urban life. In this sense, it is understandably difficult for some to imagine physical space as an innovative medium, one that might somehow dislocate the most conventional and regressive aspects of society while at the same time reorganizing these elements in a liberating and life-enriching way.

The district survey brought to light many specific nuances of Bayview's PDR districts. Overall, buildings carried similar characteristics as single-story concrete structures with loading docks with little to no visible identity.

A number of subtle qualities began to emerge when viewed through LocalData. Some of the unique distinctions in Bayview came to light when differentiating subareas. Smaller more centralized office parks with a suburban feel are present, as are corrugated metal facades that lined the streets.

One of the most run down, yet unique sites is at 749 Toland Street. Bisected by I-280, it's a highly visible set of five 'metal sheds' that pose some of the greatest potential in reimagining the district. It's unique with large footprint sizes and offers a number of capabilities in which to enhance PDR usage. The next section aims to create concepts to highlight its unique characteristics that serve PDR usage while evolving PDR perceptions.¹

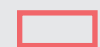
A series of questions were also included as a follow up to describe how PDR variations can further be described.

- **Proximity**
How do PDR groups cluster?
What shared amenities can be shared?
- **Density**
How many people can work here?
How much space per person?
How much space per business type?
- **Area**
How much land is still available?
How much is built?
How much is paved?

4_DESIGN INTERVENTION

SITE DESCRIPTION

- LaSalle Industrial Park at 749 Toland Street occupies 560,000 sq ft of industrial PDR space.
- The site consists of five 112,000 square foot industrial buildings that are situated on three rectangular 8.5 acre parcels.

 **CONCEPT BUILD OUT**
560,000 each building footprint
(5X) 112,000

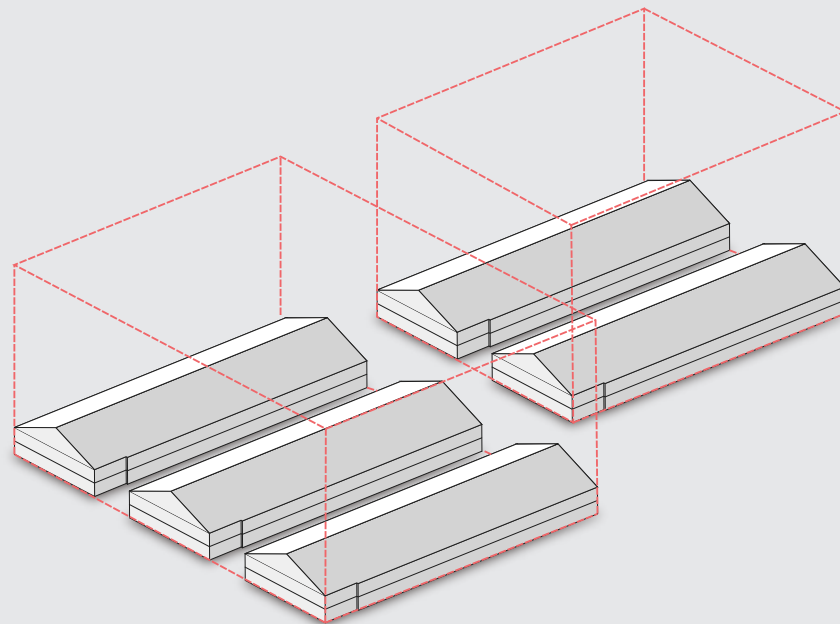
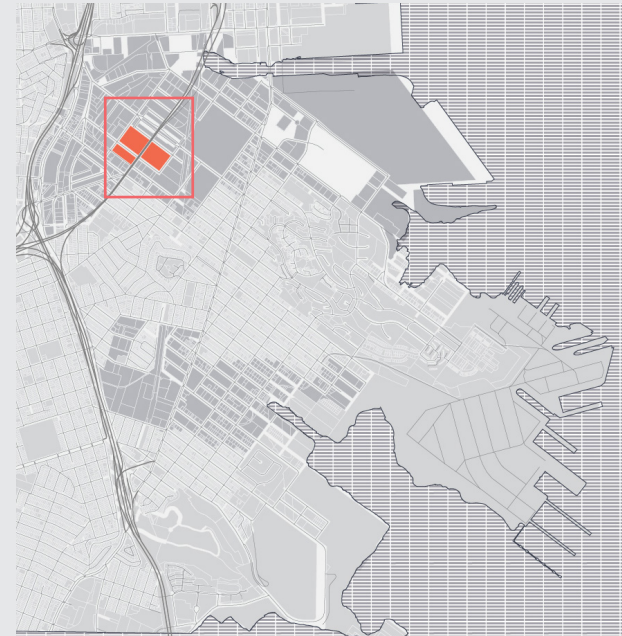


Figure 42_Site Area

SITE CONTEXT



Figure 43_Site (LaSalle Industrial Park at 749 Toland Street).

4 DESIGN INTERVENTION

MODIFYING HIERARCHIES

This subarea was chosen within Bayview to further determine how and where advances in manufacturing and production might inform considerations of new or repurposed buildings and open-space usage by modifying parameters such as a footprint sizes, multi-floor construction build out scenarios, increased density, low-impact development strategies, and shared mechanics for efficient and sustainable space utilization. The space planning definition created in Grasshopper allows for an almost infinite number of variations

to be explored simply by modifying the Excel parameters. Alterations can be made while having a visual reference in which to evaluate contextual considerations, space and regulatory requirements prior to any formal design concept. As the potential of employees increases, other considerations must be taken into account not typically found in current land use patterns. Considerations for infrastructure, open space, and perhaps urban ecological features for future considerations.

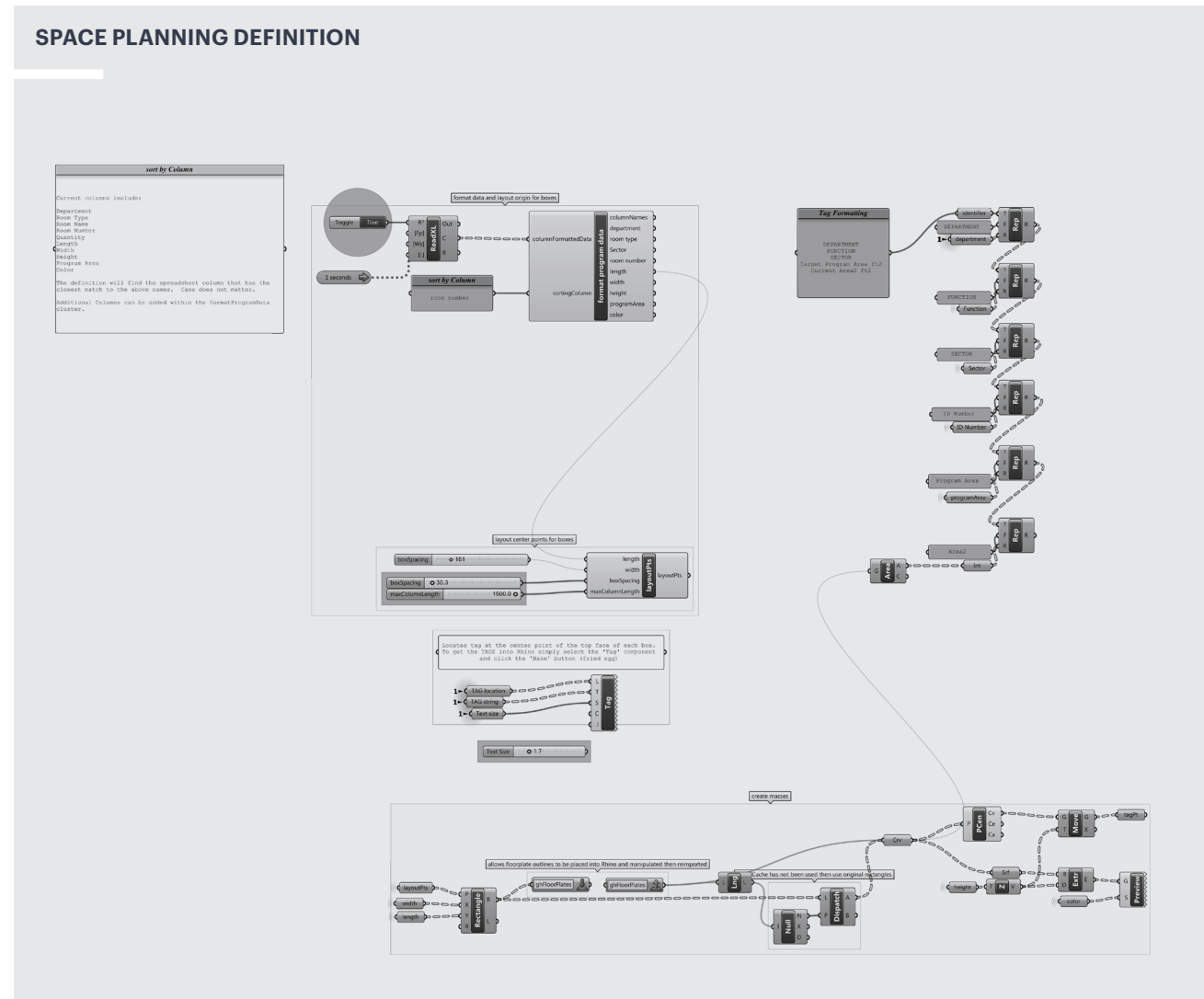
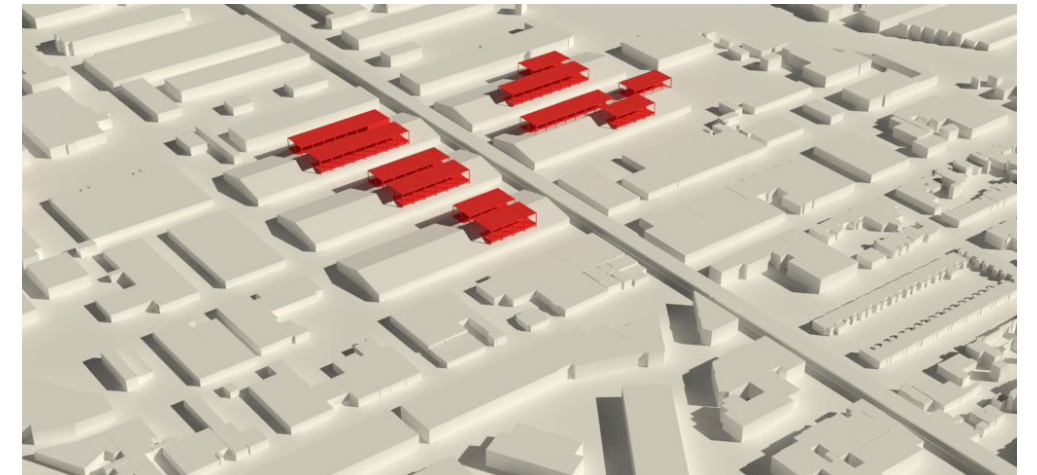


Figure 44_Revised Space Planning Definition by LMNTs.

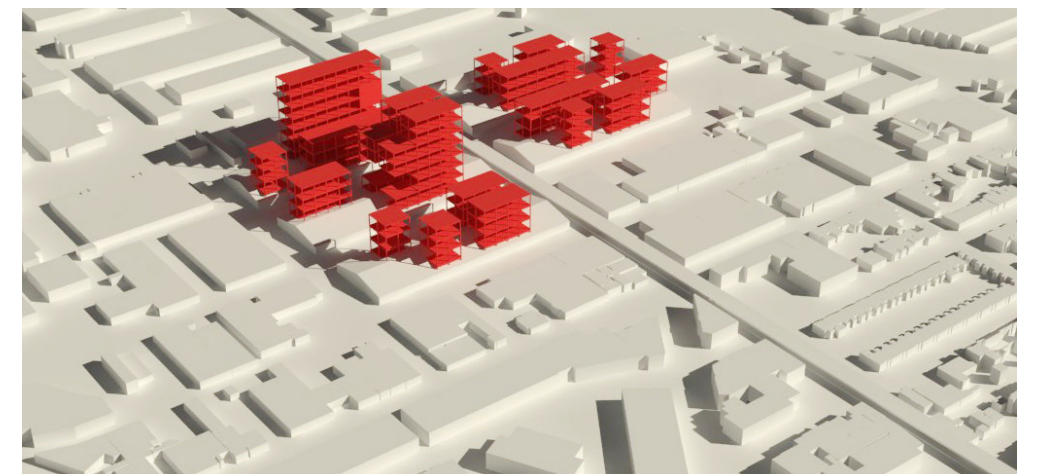
LOW-DENSITY PDR SPACE ALLOCATION



MEDIUM-DENSITY PDR SPACE ALLOCATION



HIGH-DENSITY PDR SPACE ALLOCATION



SPACE ALLOCATION MATRIX

	A	B	C	D	E	F	G	H
1	DEPARTMENT	ROOM TYPE	ROOM NAME	ROOM NUMBER	PROGRAM AREA	QUANTITY	TOTAL AREA	Height
2	CONCEPT A	PDR	PRODUCTION	101	14000	10	140000	15
3			DISTRIBUTION	102	6000	10	60000	20
4			REPAIR	103	3000	2	6000	15
5		OTHER	OPEN SPACE	104	22000	1	22000	1
6							23	228000
7								
8	CONCEPT B	PDR	PRODUCTION	201	13500	2	27000	5
9			DISTRIBUTION	202	5000	2	10000	20
10						4	37000	
11								
12	CONCEPT C	PDR	PRODUCTION	301	15000	2	30000	16
13			DISTRIBUTION	302	16000	1	16000	10
14		OTHER	PARKING	303	10000	1	10000	30
15						4	56000	
16								

5_DISCUSSION



EVALUATION OF STRATEGIES

The methodology of ‘evaluating identity’ and ‘creating distinction’ was used to prompt an increased legibility of PDR districts and to illicit reaction from various disciplines that adopt a distinct cognition of spatial creation.

ON EVALUATING IDENTITY

An abundance of information was available for the City and County of San Francisco, however a limited amount of data was present regarding the more specific aspects of Bayview’s PDR districts. Despite having only 3-days to conduct a survey, the on the ground research using LocalData proved to be one of the more most insightful aspects of this thesis and shed a great deal of light onto the contextual arrangements of Bayview. Steve Wertheim of the San Francisco planning department expressed that no such evaluation of PDR has ever been conducted and may serve as a valuable tool for continued discussion in the near future.¹ As expressed in the literature review, any proliferation of information or data will inevitably create winners and losers, however the hope is that patterns of usage, character, and uniqueness identified for Bayview begin to envision a greater discussion on the potential of adaptive relationships that serve PDR processes beyond any one individual parcel, but rather as an emergent network for the greater good.

ON CREATING DISTINCTION

The modeling concepts used in this study brought an abrupt realization into the limitations of parametric modeling and open-source software. In the early stages of experimentation, questions arose as to how to build relationships between data and where to place hierarchies of importance. Tools such as Grasshopper used in this exploration are immensely powerful when a clearly defined problem is identified. In this case, it became an

extremely useful tool to translate exported LocalData CSV files into a 3D interface and to conduct basic relational studies regarding open-space and building height usages. It has since transcended into recent professional work and has served as a preliminary tool in which to bridge the physical qualities of ‘place’ into the digital realm. Conversely numerous limitations persisted throughout the research design phase because of its open-source nature. Inconsistency and irregularity only begin to describe some of the trials and tribulations with this experimental approach that make it difficult to interface with long-range planning and design projects. Various plug-ins and versions were not compatible with each other, making the integration of studies, even in a time frame of one year difficult to navigate. This approach served as an important lesson that wasn’t highlighted in great detail within the research design section, however it stood as an integral baseline in which to further define the challenges and opportunities in parametric modeling.

THE FUTURE OF PDR

There is no guarantee that an increase in PDR space will offer more jobs, training to underserved populations, or be affordable to operate as it continues to run up against the economic realities of “highest and best use”. A summit on industrial lands in the Eastern Neighborhoods was held in 2002, yet its undertaking within this sector still has a long way to go to be fully realized. Organizations such as SFMade advocate for a more significant PDR presence, but it’s scope and can perhaps be best characterized as promoting artisanal craft making.

Overall, it’s difficult to conceive how institutional arrangements are advocating to describe or even further articulate PDR’s value and importance to the city. “Think local, buy local”, has transcended consumerist behavior and is experiencing a surge in asserts of independence and uniqueness. From farmers’ markets to artisanal crafts, smaller-scaled businesses frequently position themselves in opposition to the global industry that is viewed as environmentally corrupt, exploitative, and repressive. This sense of identity is as much ideology as culture, and it positions consumer choice as a political allegiance. This strategy is still being understood by planners and designers, but stands to become hugely profitable and even become a featured part of redevelopment efforts in plans.

The reality is frequently more complicated than enhancing ‘brand value’ because the ‘local’ in most cases is in fact less separated from the global as its positioning might indicate. Cities across The Bay like Oakland, which boast an historic manufacturing identity, a ‘contemporary’ craft culture, and an ongoing economic reliance

on global trade, can capitalize on such overlaps as they reinvent their urban landscapes. To what extent San Francisco wants to define a similar path remains unclear. As ‘global production’ becomes more local ‘mass production’ depends on streamlining efficiency to maximize profit. Historically, technological advances in production, distribution, and communication have increased efficiency either by enlarging the economies of scale or by improving cost effectiveness by outsourcing repetitive tasks. This strategy today can be argued that it’s reached its limit as production cannot get either cheaper or bigger.

Contemporary businesses are beginning to increase profit by raising desirability and the potential asking price for goods and services. Consumers are willing to pay more for what they perceive to be higher quality—whether defined by an exclusive brand, sustainable materials, or artisanal production.² Sustainability and artisanal production are no longer exclusive as global and large-scale manufacturers are adopting similar practices, supplementing their mass-produced lines with small-scale, niche products that target specific regions and markets. Limited edition clothing and boutique collections for example are all successful examples of how personalized, localized production stands to challenge traditional perceptions of warehousing, distribution, and production logistics. SFMade has capitalized on this fact and is carving out a niche within San Francisco. It’s also important to note that local production is not disconnected from global networks because concurrently, traditional craft practices find greater opportunity by relying on inexpensive, mass-produced fabric from abroad.

Technology allows access to an expanding consumer market, even when operations remain local. For example, sellers rely on a global network of rapid delivery services as well as sophisticated e-commerce and technological applications. These new forms of production don’t necessarily fit into the industrial spaces of the past and again highlights the importance of adaptability rather than preservation for some portion of PDR use and activity. However, these industries are also not easily contained within conventional commercial or retail areas. “Declining” urban manufacturing districts such as San Francisco’s waterfront and Eastern Neighborhoods offer opportunities to reinvent productive spaces. That in some regard has already begun to be expressed in places like Central Waterfront at Pier 70.

The ongoing debate in San Francisco is about the Golden State Warriors’ new basketball stadium in Mission Bay that also call for new condominium buildings: high-rise, high-end, high-density units that are currently being constructed and selling rapidly along the waterfront.³

While San Francisco’s port has not been a major industrial hub for decades, Oakland’s port is still the second most active in California behind Los Angeles and Long Beach.⁴ Not only is a majority of the waterfront still used for port functions and therefore inaccessible for recreation or development, the freeways will remain as vital transportation links for the region. The answer for Bayview and similar neighborhoods is not necessarily to mimic these urban strategies, but rather build on the energy, character, and physical infrastructure that already exist.

Material and goods pass through Bayview’s loading docks everyday. Simultaneously, hundreds of craftspeople in the surrounding areas are making and selling products. The convergence of global and local manufacturing activity is a huge opportunity for Bayview to create a new type of urban district aligned with PDR values.

As it stands today, this overlap is not supported by its existing spatial types, buildings, and uses. There exists no one clear solution for PDR, yet a more interconnected supply chain, use of energy systems, and transportation efficiencies would not only reduce redundancies, it would also provide creative opportunities for a new mode of manufacturing, distribution, production, and repair services but also create a discrete separation between global industrialism and local craftsmanship. This thesis suggests making all of these processes we take for granted more legible, partly because production at the global scale has remained largely invisible, separated from a city’s other areas for living and working. San Francisco’s with all of its issues can have the best of both worlds.

Isolated distribution chains makes the connection between “making” and other physical aspects of urban life arbitrary. The research design offers one of many possibilities to explore ways to engage with PDR. This is not to suggest a decoupling from digital society, but the current urban form of this environment as outlined in the identity ‘sub-section’ looks for unique aspects of differentiation than a traditionally self-contained industrial district. The new means of production are becoming increasingly multi-scaled and publicly accessible as evident with the Garment District in New York

City and Menomonee Valley in Milwaukee. Mass production factories are unlikely to return to American cities, however it's important to note that this does not mean the end of manufacturing all together. Nor should it suggest that its activity be placed further away from urban centers because it is not easily recognized or understood.

In regards to upward mobility, formal education is important, but it is far from the only path into middle-wage work. Educational attainment is by far a desirable pathway to a better life in the United States, but it is not the only path toward a better paying job. There are tens of thousands of job openings in the Bay Area each year that pay middle wages and do not require college.

The reconsideration of large-scale factories exemplified in the research design opens up space and opportunity for different enterprises and new public spaces that address both local and global scales, accommodates both cultural consumption, and material fabrication, distribution, or production. If there were ever a time to test a new economic and urban model for PDR in San Francisco the time is now. The illustrations presented highlight how modular efficiencies can be created to enable a dialog and exploration of its potentials while staying true to its original purpose of serving the city with existing and newfound modes of production and manufacturing.

RECOMMENDATIONS

A series of recommendations stand in which to further define modes of engagement, partnerships, policy changes, planning and design criteria to examine the evolution of PDR beyond 'identity' and 'distinction'.

The recommendations outlined here stand to ensure that the future of PDR remains truly affordable; takes advantage of items such as flexibility, density, and efficiency; and promotes local workforce labor. The following program outlines a pathway of how to critique and evolve current and future PDR governance.

- 1. Revisit PDR definitions and fully articulate employment sectors allowed within designated uses with additional public and private sector outreach.**
- 2. Encourage energy district and sustainability planning, design, and implementation for PDR districts.**
- 3. Develop PDR public benefit concept massings for private developers and Office of Economic Development.**
- 4. Connect workforce development organizations to any projects approved under this new optional zoning classification.**
- 5. Further develop "micro-unit" PDR designs.**
- 6. Create and promote designs that allow open-space/greenroof and wall features on site.**

6_CONCLUSION



Image_ "Bayview Rise" is a mural on a 197-foot tall abandoned group of silos. At night, filtered light shines on the mural and different colors and images emerge as the light changes. It's symbolic presence highlights Bayview's transformation. Eli Felicitas (2014).

OUTWARD TRAJECTORY

Urbanism today is ubiquitously described for fostering innovation and enabling serendipitous social encounters within our evolving cultural revelations. As a society we must realize that it wasn't all too long ago the phrase 'the phone' has transitioned to 'your phone' and the degree of ease and efficiency have already begun to transcend into the manufacturing, production, and distribution worlds. The semantics of 'copy', 'print', and 'send' having taken on entirely new meanings in a very short period of time. The reality of adding 'make' to our lexicon is already underway and offers an undeniable range of possibilities as to what a 'New Industrial Revolution' might hold for PDR districts. What exactly is to become of PDR remains to be seen, yet its significance cannot be understated. The preference of time over efficiency for production and manufacturing may ultimately allow a larger conversation as to what the future might hold. Oakland, San Jose, and other suburban areas such as San Leandro account for a significant allocation of industrial land around the Bay. Some may argue that these

designated areas already meet current and future demands of the region, however misconception of 'industrial' are often blurred, undefined, and ambiguous across various jurisdictions. The roles, activities, and purpose of non-residential and non-commercial activities are essential, yet widely misunderstood as expressed in the research, particularly in dense and rapidly changing urban centers.

Bayview in particular folds together much of San Francisco's riches, poverty, promise, and potential at numerous conjunctions. It's legacy served a great importance to the city and while it may not hold the answer to the city's most pressing issues, it does offer a path to evolve discussions revolving around middle-income employment sectors, upward mobility, and diversity of social constructs.

Waiting for others to amend Bayview's future is one approach, but as Abraham Lincoln and countless others have uttered the some variation of this quote: "The best way to predict your future is to create it."¹

FINAL REFLECTION

Examining the transition of any city is compelling because it invites comparison and tempts society towards self-examination. What began as an exploration to better understand the proliferation of data, emergence of digital technology, and its connection to the development of cities eventually led to a more poignant question of who—and what—get left behind along the way. Access to data and the rise of digital technology have democratized a wide array of tools, empowering organizations, companies, and citizens to take matters into their own hands, but this is not prevalent across varying social classes and employment sectors. Like the industries that preceded it, digital technology is not a philosophy, a revolution, or a cause. It's increasingly becoming a group of powerful corporations and wealthy individuals with their own well-guarded interests. Those interests can occasionally be aligned with the greater public interest in mind, but San Francisco's existing institutional organization makes it difficult to enable or encourage.

Arguments for reducing or eliminating PDR land based solely on 'best and highest use' criteria have merit when viewed through a singular lens, however this type of rational and systematic thinking is limited and dangerous when evaluating its true value and potential. This thesis revealed that people contain both digitized and un-digitized cognitions of knowledge, fears, preconceptions, friendships, and memories. While neighborhoods, cities, and regions can broadly be defined as having a common set of values, it also inevitably brings deeply embedded conflicting interests. It's evident that the design of San Francisco and the way it is governed requires an integrated approach both locally and regionally with a deep emphasis on legibility, understanding, and accountability. Emphasizing the themes of 'identity' and 'distinction' serve to highlight the underrepresented role PDR provides to San Francisco while highlighting an urgent need to evolve its definition because the transaction-cost of preservation—or simply doing nothing—might prove to be more costly.

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