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Regional Industrial Land Preservation: Perspectives from San Francisco Bay Area Cities on a Priority Production Area Program

A Research Report from the University of California Institute of Transportation Studies

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16. Abstract This report lays the groundwork for Metropolitan Transportation Commission – Association of Bay Area Governments (ABAG-MTC) as they develop a Priority Production Area (PPA) program. The PPA program will include locally designated industrial zones and seek to identify resources for these areas, while recognizing the need to balance land uses and that creating housing across the Bay Area is of primary importance. This study initiated outreach and engagement with local jurisdictions and experts to gain a better understanding of how local jurisdictions define their industrial space, how well current zoning works for their industrial land users, and the degree to which a PPA designation could help with business operations, retention or shaping the area's future development. This report synthesizes input received as part of this engagement. Given that the PPA program is an action item of Plan Bay Area that integrates transportation and land use management into its long-range plan in an effort to meet greenhouse gas reduction targets, addressing the transportation needs associated with industrial lands could be a central component of the PPA program. Therefore, this report also explores both goods movement and worker accessibility challenges mentioned by city staff and experts and recommends how these PPA program could address these issues. Going forward, ABAG-MTC will need to prioritize the suggestions and ideas generated through this initial outreach process and determine which challenges and needs can feasibly be addressed with the PPA program.			
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Regional Industrial Land Preservation: Perspectives from San Francisco Bay Area Cities on a Priority Production Area Program

UNIVERSITY OF CALIFORNIA INSTITUTE OF TRANSPORTATION STUDIES

December 2018

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Executive Summary

This report lays the groundwork for Metropolitan Transportation Commission – Association of Bay Area Governments (ABAG-MTC) as they develop a Priority Production Area (PPA) program over the next two to four years. The PPA program was recommended by the ABAG Executive Board on the premise that industrial land plays an important role in supporting the regional economy. Industrial land has been found to provide space for support services for driving sectors of the regional economy and to support a high share of middle-wage job opportunities that may be at risk due to pressure from other uses. The PPA program would include locally designated industrial zones and seek to identify resources for these areas, while recognizing the need to balance land uses and that creating housing across the Bay Area is of primary importance.

This study launched an initial PPA program development phase that initiated outreach and engagement with local jurisdictions and experts. Specifically, this report synthesizes findings from conversations with planners and economic development staff at eleven jurisdictions and four expert organizations. These conversations explored how local jurisdictions define their industrial space, how well current zoning works for their industrial land users, and the degree to which a PPA designation could help with business operations, retention or shaping the area's future development.

Interviews with staff from widely diverse localities and economies shed light on the range of issues that should be considered in establishing a PPA program. City staff stated that they believe industrial land is important for employment and economic development generation, supporting the regional supply chain and ecosystem of goods production, distribution, and repair, and generating local revenue stream. Staff also identified a range of challenges for industrial land and businesses, including market pressures, limited space, mixed-use districts, outdated zoning codes and policies, outdated infrastructure, environmental issues, talent attraction, internal city government resources and structure, and political barriers. They suggested that the PPA program could seek to address these challenges through funding, focusing specifically on employment, providing a toolbox of best practices, and elevating the profile of land through a regional framework.

Staff at some municipalities were concerned that a PPA program may lock them into industrial uses that may not be beneficial in the future, duplicate existing industrial zoning or protections, or be misused by politicians. Despite some concerns, city staff were generally supportive of a PPA program. Staff at a few jurisdictions proposed some criteria that could be used to designate a PPA site, including location characteristics, condition of nearby transportation infrastructure, quality of life, economic value, and equity metrics. Staff from a range of localities also described a number of best practices that could be shared across municipalities via the PPA program to help to ensure thriving PPA sites.

This report also pays particular attention to transportation considerations for industrial land since accessibility for both people and goods is critical for supporting industrial businesses. Given that the PPA program is an action item of Plan Bay Area that integrates transportation and land use management into its long-range plan in an effort to meet greenhouse gas reduction targets, addressing the transportation needs associated with industrial lands could be a central component of the PPA program. Specifically, this report explores both goods movement and worker accessibility challenges mentioned by city staff and experts and recommends how these PPA program could address these issues.

Ultimately, the feedback from city staff and experts compiled in this report will guide the development of the PPA program. Going forward, ABAG-MTC will need to prioritize the suggestions and ideas generated through this initial outreach process and determine which challenges and needs can feasibly be addressed with the PPA program. ABAG-MTC also will need to further develop the PPA program policies and the mechanics of the program, including a set of criteria that they will use to determine eligibility for a PPA designation and to identify optimal areas that could be designated as PPAs.

Introduction

In January 2017, the Association of Bay Area Governments (ABAG) Executive Board unanimously recommended that ABAG staff develop a Priority Production Area (PPA) program for industrial areas in the Bay Area region. The PPA program was recommended on the premise that industrial land plays a vital role in supporting the regional economy by providing operating space and support services for driving sectors and important local clusters in the Bay Area. Furthermore, industrial land has been found to support a high share of middle-wage job opportunities, yet these jobs are at risk from pressure for housing and mixed-use construction (Chapple, 2017). The PPA program would seek to identify resources for industrial areas, while recognizing the need for a balance of land uses and that creating housing is of primary importance. The adoption of this program was supported by politicians across the region on the ABAG Executive Board, with some of the strongest support coming from suburban counties and the urban core.

The development of the PPA program is currently underway and will be completed over the course of the next two to four years. The program would include locally designated zones where production, distribution, and repair (PDR) services would receive priority in determining future land use, and would be a designation that cities can voluntarily adopt. The specific elements of the PPA program are underdevelopment, yet ABAG-MTC has identified a handful of possible high-level benefits of the policy for local jurisdictions throughout the Bay Area region, including the following:

1. The PPA program could identify best practices around the region and compile a prototype of criteria a community could use if they want to designate a PPA. This would serve as a framework and/or toolbox as cities plan for industrial land.
2. The PPA program could possibly tie some transportation dollars or funding programs to the PPAs. Funding could provide support for technical assistance and planning for industrial land, as well as infrastructure improvements.
3. Related policies or programs for economic development could provide joint support to PPAs, particularly ABAG-MTC's Economic Development District (EDD) program that is currently being developed.

The PPA program, if adopted, will be one of the tools used by the Association of Bay Area Governments – Metropolitan Transportation Commission (ABAG-MTC) in developing its future state-mandated Sustainable Communities Strategies (SCS) for the nine-county Bay Area region (Plan Bay Area). The SCS is an ongoing long-range planning effort conducted by ABAG-MTC in order to meet the requirements of California's 2008 Senate Bill 375 to accommodate future growth and reduce greenhouse gas emissions from cars and light trucks. In July 2017, Plan Bay Area 2040 was adopted by both the Metropolitan Transportation Commission (MTC) and the ABAG Executive Board. That same month, staff of ABAG and MTC were consolidated. The PPA concept had been important to each agency separately and become an initiative under the consolidated staff.

The PPA program is an action item in Plan Bay Area 2040, and will also be included in ABAG-MTC's EDD proposal. Plan Bay Area includes recommendations for the development of PPAs, as follows (from Table 5.2):

- Support regional growth by balancing housing, transit-oriented jobs, and industrial uses.
- Establish criteria for Priority Production Areas to encourage local jurisdictions to plan for space needed for manufacturing, distribution and repair while assessing ways of meeting other critical needs such as housing and assess areas that could be converted to housing or mixed-use development.
- Evaluate potential incentives that could be used to support companies that locate offices in transit-rich as opposed to auto-centric areas.
- Evaluate the use of last-mile transportation solutions to connect communities with warehouses and industrial jobs that cannot be located in downtowns due to land requirements.

The PPA program would address a gap in planning for employment that ABAG-MTC has identified in Plan Bay Area. Plan Bay Area in its current form includes two land use designations: Priority Development Areas (PDAs) and Priority Conservation Areas (PCAs). These designations are voluntary and do not override local land use control. However, they do provide incentives, namely funding for planning grants and technical assistance for projects in these areas, that are consistent with the designation's vision.

PDAs are identified by local jurisdictions as areas for investment, housing and job growth. Criteria for designating a PDA include: 1) located within an existing community; 2) located within walking distance of frequent transit service; 3) designated for more housing in a locally adopted plan or identified by a local government for future planning and potential growth; 4) nominated through a resolution adopted by a City Council or County Board of Supervisors. ABAG-MTC provides support for achieving PDA visions through the PDA Planning Grant and Technical Assistance Program, Placemaking Initiative, One Bay Area Grant (OBAG), East Bay Corridors Initiative, Resilience Program, and Entitlement Efficiency working group.

PCAs are open spaces identified as lands in need of protection from urban development and other uses. Such spaces provide agricultural, natural resource, scenic, recreational, and/or ecological values and ecosystem functions. PCA identified lands are eligible for funding through the OBAG program.

The PPA program would create a third land use designation in Plan Bay Area. Planning for non-office businesses is often left out of the PDA framework. ABAG-MTC's staff describes PDAs as places that bring housing, transit and economic services together. Thus, PDAs often are not specifically job oriented. Even when jobs are included in PDAs, the mixed-use environment and implied level of density is not compatible with most industrial jobs. The PPA program would provide an opportunity for regional planning to consider land use needs of a broader range of employment types and for cities to receive regional support for areas of importance to employment that do not have the housing and transit location characteristics of PDAs.

The PPA program would also build off of the partnerships and knowledge pool that the Bay Area Urban Manufacturing (BAUM) Initiative has developed over the past three years. The BAUM Initiative launched in 2016 and includes 27 partner cities across the Bay Area. Through this ongoing effort, BAUM has developed toolkits to provide city staff, policy makers, and partner organizations with strategies to support manufacturing. While this effort is focused on manufacturing, the PPA program provides an opportunity to continue and expand regional coordination around a broader set of industrial land uses.

This report summarizes findings from an initial PPA program development phase that initiated outreach and engagement with local jurisdictions. Interviews with eleven cities and four economic development experts in the region and secondary data analysis provided insight into how a PPA might work in different cities, the degree to which a PPA could benefit different jurisdictions, potential criteria cities could use to designate PPAs, and how transportation challenges around industrial land could be addressed through the PPA program. The findings discovered during this process will serve as a launching point for ABAG-MTC as they begin to shape the PPA program.

Specifically, this report seeks to answer the following questions:

1. In what ways would a PPA program be useful for cities, according to local economic development and planning staff?
2. What would be needed to make a PPA program effective in a local jurisdiction? What characteristics of a jurisdiction would make it a good candidate for a PPA? What criteria would be important for identifying types of places that could work as PPAs?
3. If a PPA program were to be adopted, how would transportation play a role? How could the challenges of providing transportation for workers to industrial jobs while also maintaining effective transportation for goods be addressed in a regional PPA program?

Conversations with local jurisdictions revealed that city staff are interested in a PPA program that could address a number of challenges that cities experience with industrial land, including market pressures and competition with other uses, limited space, mixed-use districts, outdated zoning codes and policies, outdated infrastructure, environmental concerns, talent attraction, internal city government resources and structure, political barriers, and a lack of constituency. Staff expressed that the PPA program would be useful in addressing these challenges by elevating the profile of industrial land through a regional framework, focusing on employment issues, providing funding, and establishing a toolbox of regional best practices. Transportation challenges to, from and within industrial sites for both goods and people were identified as a primary concern across jurisdictions. Given ABAG-MTC's role in transportation planning and financing, creating a transportation plan could be a key element of the PPA program. The following sections will discuss each of these issues identified by city staff in more detail and how they could shape the ultimate form of the PPA program.

Background and Motivation

This section discusses the motivation for developing a PPA program, referencing literature that acknowledges both the potential pros and cons of preserving industrial land. It also highlights lessons learned from other regions' industrial land use policies, and concludes with the reasoning for addressing access to industrial sites as a component of the PPA program.

Why develop a PPA program?

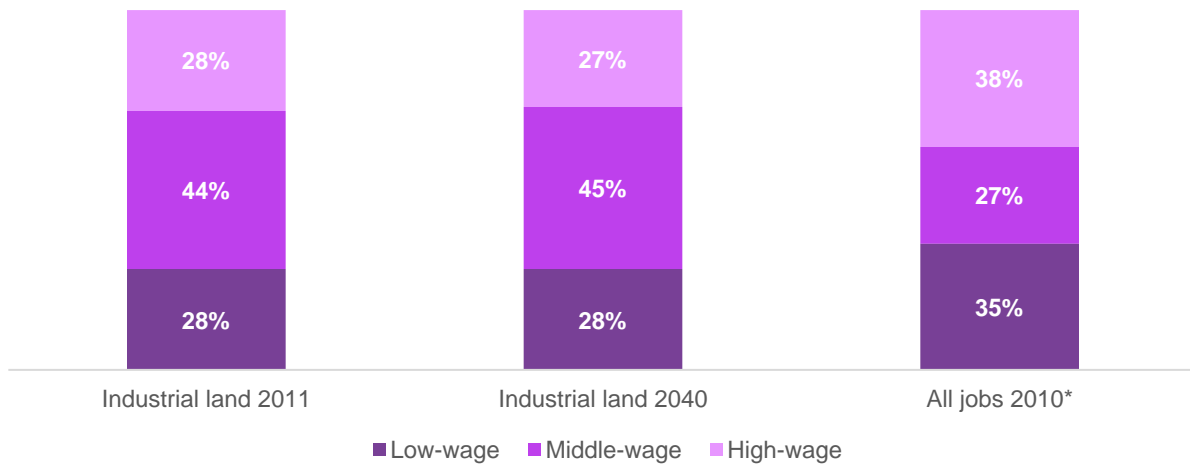
It is no secret that space in the core Bay Area is limited for all uses, and the housing crisis is rightfully receiving the spotlight. The ABAG Executive Board action on the PPA program acknowledges the need for both housing and industrial uses and the importance of a program that will not divert resources from addressing the undersupply of housing. The PPA program will seek to complement the existing development strategies for housing and office jobs in an effort to retain industrial spaces that provide operating space and support services for driving sectors or important local clusters in the Bay Area.

The *Industrial Land and Jobs Study for the San Francisco Bay Area* (2017), conducted by Professor Karen Chapple at the Center for Community Innovation (CCI), inventoried the region's industrial land and examined its capacity for future growth, occupancy, and expected demand. Study analysis reveals that, although the supply of industrial land exceeds projected demand at a regional scale, there is a mismatch between available land supply and expected growth in demand in the urban core, where industrial lands are at risk of pressure to convert to other uses.

Chapple defines industrial land uses to include production, distribution, and repair (PDR) businesses – a definition adopted from San Francisco's PDR industrial land preservation program. PDR uses go beyond what one may typically envision as industrial and the classic assumption that industrial means manufacturing. Chapple predicts the following industries, in rank order, as those that will contribute an additional 1,000 new jobs or more by 2040: Merchant Wholesalers of Durable Goods (NAICS code 423) and Nondurable Goods (424), Repair and Maintenance (811), Transit and Ground Passenger Transportation (485), Waste Management and Remediation (562), Machinery Manufacturing (333), Truck Transportation (484), Support Activities for Transportation (488), and Warehousing and Storage (493). Furthermore, the types of businesses that constitute each of the PDR categories often varies by city and is somewhat in flux given evolving industries, especially tech and R&D uses that could be considered office or industrial.

Chapple finds that industrial lands contain a high share, relative to the region, of jobs that provide middle-wage opportunities for workers without a college degree. Overall, middle-wage jobs were found to be sixty percent more concentrated on industrial land as in the region. Furthermore, in 2011, middle-wage jobs accounted for almost half (44%) of jobs on exclusive industrial land, while low-wages jobs accounted for 28%, and high-wage jobs for 28%; the study predicts that this distribution of employment is expected to remain similar through 2040 (Figure 1). This finding suggests that a loss of industrial land in the urban core could push out these middle-wage jobs in the PDR sector, exacerbating sprawl and equity issues.

Figure 1: Wage distribution of jobs on industrial land in 2011 and 2040, compared to wage distribution for all jobs in the Bay Area in 2010



Source: adapted from Chapple 2017
 *from the Regional Economic Prosperity Strategy

Industrial land has been converted in areas where the market values non-industrial uses over industrial uses and the city has permissive zoning codes. When land is in short supply, PDR businesses react in a variety of ways: some businesses will leave; others will increase productivity to compensate for increased land prices; and others may adapt their land consumption altogether, transforming their business model to relocate to high density sites downtown while outsourcing or moving their production facilities (Chapple, 2017).

However, while land availability will not drive industrial job growth single handedly, preserving space for industrial uses is key to maintaining the PDR sector’s role in the region (Chapple, 2014). Once industrial land is converted to another use, it is highly unlikely that it will ever be converted back to industrial. Although the PDR sector may not stimulate regional job growth on its own, providing space for industrial uses is key to stabilizing the PDR sector that plays a critical role in two driving sectors in the Bay Area: high-tech and consumption needs for the creative workers. The interrelationships between these sectors enables agglomeration economies that support the regional economy and often provide value to city governments in the form of revenues. Additional clusters are supported through the PDR sector, such as the agricultural and food sector, as well as logistics.

Industrial land preservation is expected to have several advantages (Chapple, 2014). In 1986, Heikkila and Hutton suggested that an industrial land preservation policy offers the advantages of keeping rents low for businesses and providing certainty to developers about city intentions, particularly when the industrial district is economically viable, there is a high level of structural employment, and the industry generates negative externalities. Furthermore, Howland finds that industrial districts support the regional economy as job generators, providers of supplies and services, including back-office functions or automobile repair for businesses and

households, and low-cost space. Chapple establishes a causal link between industrial land designation and job creation or retention that further supports the importance of industrial land preservation. Her analysis reveals that firm size plays the most important role in business dynamics, and the availability of industrial zones and large buildings also support firm expansion. Thus, retaining a reserve of flexible industrial zones that can accommodate a range of industrial businesses is critical to sustaining industrial agglomeration economies. Policy makers use industrial land's role in regional agglomeration economies to justify public intervention in the market based on industrial land's roles in regional agglomeration economies.

However, there are also costs, or potential inefficiencies, of industrial land preservation. Heikkila and Hutton suggest that preserving industrial land has a number of potential costs, including inefficient use of resources, inhibition of industrial transition, and impacts on the local tax base. Opponents also contend that the costs of the city subsidizing the land outweigh the benefits of the policy and dispute the regional growth claim by arguing that this policy slows relocation of industrial businesses to perhaps more economically efficient areas (Hills & Schleicher, 2009). Furthermore, zoning for industrial land has been accused of interfering with the market that may on its own generate more economically and socially optimal outcomes. However, zoning also is a means of correcting market failures, such as negative externalities generated by industrial uses. The fact that zoning and land use controls operate under local control calls for conversations with local jurisdictions to better understand industrial land across the region.

Lessons learned from other geographies

A number of cities across the U.S. are often cited for their industrial land preservation policies or strategies. Chapple's study highlights three cities that have established programs to preserve their industrial spaces through local land use controls: Chicago's Planned Manufacturing Districts (PMDs) and Industrial Corridors, New York's Industrial Business Zones (IBZs), and San Francisco's Production, Distribution, and Repair (PDR) zones (see: <http://www.planningfor.jobs/policy-tools>). In addition, Portland, Philadelphia, Boston and Vancouver, BC also have notable industrial land preservation regulations.

The Puget Sound Regional Council (PSRC) conducted a thorough comparative analysis of industrial land strategies in each of the seven aforementioned cities. PSRC's survey identified five overall strategies employed by each of these cities: 1) define geographic areas within industrial-zoned land for increased protections; 2) improve existing zoning codes; 3) create new zoning categories to reflect patterns of industrial use; 4) align recommendations for infrastructure with land policies; 5) provide tax incentives, assistance with workforce development, services for business retention and attraction, and assistance with site selection for businesses looking to expand or relocate (PSRC, 2015).

Regions that have taken a regional approach to industrial land use planning, namely Los Angeles and Seattle, are more relevant to the concept of the PPA program. The City of Los Angeles' *Industrial Development Policy Initiative* (2004) frames its industrial land strategy within

a regional and global context, recognizing that private and public policy forces at all scales influence industrial businesses and development. One of the primary categories within the city's initial industrial land policy framework was "regional cooperation for economic development." The Puget Regional Council (PSRC), the MPO for the Puget Sound region, created a regional industrial designation in 2003, Manufacturing/Industrial Centers (MICs). Given PSRC's role as a Metropolitan Planning Organization (MPO), many of the elements of their industrial land strategy could be applicable to ABAG-MTC's PPA program.

PSRC defines its MICs as "locations of more intensive industrial activity that are typically characterized by large contiguous parcels served by the region's major transportation infrastructure, including roads, rail, and port facilities," and "discourages non-supportive land uses in regional MICs, such as retail, non-related offices, or housing." In 2015, PSRC assessed economic activity on industrial land in the central Puget Sound region. The study found that MICs have been effective given that there was a minimal loss of industrial land in these areas since 1998, despite the fact that MICs are not binding.

PSRC also recommends 10 policy approaches that local jurisdictions and regional actors should consider to strengthen the competitiveness of their region's industrial lands. ABAG-MTC could consider incorporating similar recommendations into the PPA program:

1. Ensure an adequate supply of land for industrial users;
2. Simplify regulations to improve permitting efficiency;
3. Develop a strategic planning framework for industrial areas;
4. Take advantage of Industrial Revenue Development Bonds (statewide financing);
5. Facilitate information sharing of best practices;
6. Update regional designations;
7. Continue to monitor supply and demand for industrial land;
8. Align infrastructure planning with industrial land policy;
9. Provide support for brownfields cleanups;
10. Provide economic development support.

Overall, a number of cities have established industrial land preservation policies to retain industrial space within city limits. However, few regions have undertaken a regional industrial land preservation strategy, likely due to the lack of teeth of regional actors given that land use controls are under local power. However, PSRC's industrial land designation strategy and associated policies provide a foundation for a regional approach to industrial land preservation.

That said, no region is the same; thus ABAG-MTC will have to consider which elements of its counterpart's strategies are relevant to the PPA program in the context of the Bay Area region.

Access to industrial sites

This report also pays particular attention to how both goods and people could better access industrial sites. *Plan Bay Area's* mandate is to reduce greenhouse gas emissions through integrated transportation and land use management planning; incorporating a transportation element into the PPA program would support this framework. Furthermore, Chapple's *Industrial Land and Jobs Study* emphasizes the importance of access to transportation networks in both determining the future of industrially zoned lands, as well as improving the economic development potential of businesses located on industrial land. Chapple suggests that transportation considerations, such as proximity to freight facilities or transit, be used as key criteria for determining whether an industrial site should be preserved or converted. In addition, Chapple's study also conducted a survey of business owners located on industrial land to identify their infrastructure needs. The survey revealed that transportation access, both via transit, roads, and ports/rail, was among the highest priorities for businesses. These findings warrant further research into how the PPA program could support transportation improvements to improve accessibility to industrial areas.

Figure 2: Sharrow for bicyclists in West Berkeley Industrial area



Figure 3: Loading dock in Dogpatch industrial area in San Francisco



Images by author

Methodology

I conducted semi-structured interviews with economic development and planning staff at eleven local jurisdictions in the Bay Area (Table 1), and with four subject matter experts. ABAG staff attended and assisted with the majority of the interviews. Interviews were intended to identify existing efforts to preserve industrial land and activities/sectors, to more broadly understand the city's existing policies related to industrial land, and to gauge their level of interest in a PPA program. I conducted interviews with municipal officials since land use controls are under their jurisdiction.

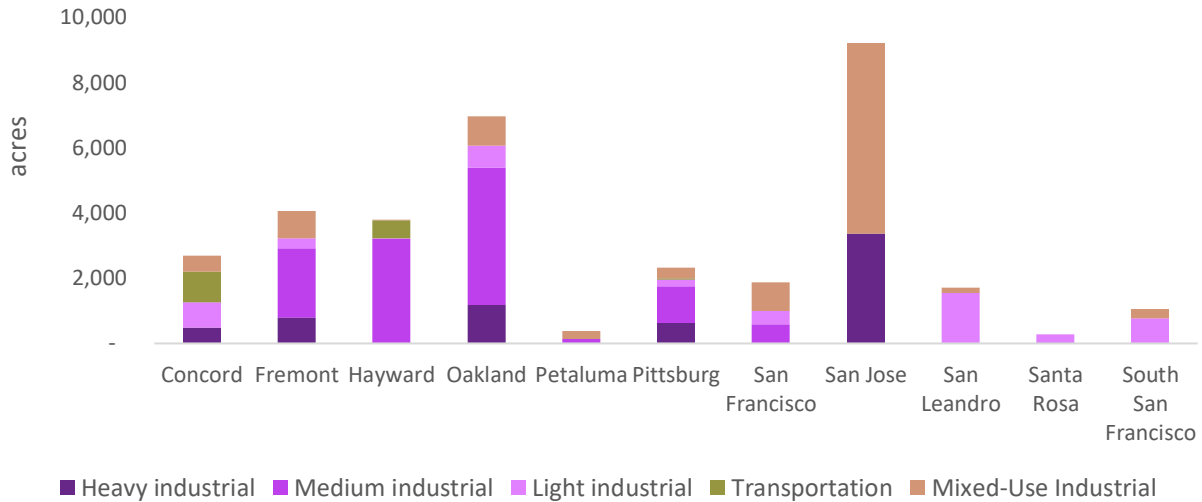
Specific questions were asked about reasons for wanting (or not wanting) a PPA program, characteristics of the program that would be helpful for cities, and transportation challenges that could be addressed through the PPA program. I explained some possible benefits of the PPA program that ABAG-MTC staff has identified, including funding incentives and a set of regional best practices to be shared across jurisdictions. I asked city staff if these elements of a PPA program would be useful for them, what specifically they would need funding for related to their industrial land, and if there were other benefits that a PPA program could provide. These questions were open-ended to allow city staff the opportunity to brainstorm elements of a PPA program that would be useful for them. I also asked city staff what purposes of a PPA would be helpful or appropriate for their city; I suggested potential ideas, such as protection of industrial uses and suppliers from encroachment by residential, special funding or services for industrial uses or workers, or a clear signal to developers where residential is desired versus industrial. For the full set of questions, see Appendix I: Interview Guide.

Table 1: Local jurisdictions interviewed

City	County	DEPARTMENT(S) INTERVIEWED		CITY CHARACTERISTICS		
		Economic Development	Planning	Total population	Total jobs	Industrial land (acres)
Concord	Contra Costa	x	x	128,726	55,165	2,686
Fremont	Alameda	x		233,136	109,387	4,062
Hayward	Alameda	x	x	158,937	69,823	3,800
Oakland	Alameda	x		420,005	198,470	6,970
Petaluma	Sonoma	x		60,530	27,062	382
Pittsburg	Contra Costa	x	x	70,679	14,238	2,331
San Francisco	San Francisco	x		864,816	700,616	1,882
San Jose	Santa Clara	x	x	1,025,000	411,008	9,227
San Leandro	Alameda	x	x	90,465	46,282	1,717
Santa Rosa	Sonoma	x	x	175,155	72,139	285
South San Francisco	San Mateo	x		66,980	50,970	1,055

Sources: Total population, American Community Survey 2012-2016; Total jobs, Longitudinal Employer-Household Dynamics (LEHD) 2015; Industrial land, Chapple 2017.

Figure 4: Type of industrial land in each local jurisdiction interviewed



Notes: Mixed-Use Industrial areas zoned for industrial-commercial, industrial-residential, and industrial-office. The data used to produce this chart was calculated based on the regional industrial zoning shapefile created by Chaple’s *Industrial Land and Jobs Study* that compiled zoning maps for all local jurisdictions in the Bay Area.

Local jurisdictions were chosen for interviews based on a few different criteria: 1) if they have a large amount of land designated for industrial uses, or 2) based on recommendations from ABAG-MTC and the BAUM Initiative that suggested cities with relevant current initiatives and policies related to industrial land. The BAUM Initiative provided initial introductions to staff at each city through their network.

The eleven local jurisdictions interviewed include a range of place types across the Bay Area. The sample included the three largest cities in the Bay Area and a sampling of suburban places. The interviewed cities represent a range of income levels, ranging between \$62,705 in Santa Rosa and \$111,613 in Fremont. Figure 4 illustrates the range of industrially zoned land across the cities that were interviewed. Some of the local jurisdictions zone for a variety of industrial uses, such as Pittsburg that includes heavy, medium, light, transportation, and mixed-use industrial. Whereas other local jurisdictions zone for just two or three types of industrial, such as San Jose that includes heavy and mixed-use industrial. Additional information about the industrial land in each of the local jurisdictions that were interviewed is included in Appendix II: City Profiles.

City Feedback

Interviews with city staff provided insight into their perspectives on industrial land and the PPA program. The subsequent sections discuss city feedback on the following issues: importance of industrial land to cities, current challenges for industrial land, reasons for wanting a PPA program, reasons for not wanting a PPA program, potential criteria for designating a PPA site, best practices from cities, and potential PPA program policy and goals.

Importance of industrial land

Local jurisdictions emphasized three main reasons for why industrial land is important to them: 1) employment and economic development generation; 2) support for the regional supply chain and ecosystem of goods production, distribution, and repair; and 3) local revenue stream.

Employment and economic development. Most city officials said they believe that the PDR sector offers opportunities for people with lower educational attainment to access jobs. They also stressed that providing for middle-income jobs through industrial uses is critical to achieving equity and economic development goals. The City of Oakland economic development staff person who works with this sector argued that the need for residents to have access to industrial jobs is “hardwired into the DNA of Oakland’s economic development vision related to [...] all of its people.” Furthermore, staff at the City of San Jose, the tenth largest city in the U.S., further emphasized the need to provide employment for its residents of lower educational attainment. With more than half of their adults over the age of 25 who do not have a 4-year degree, they are seriously considering the manufacturing sector as a means for providing quality, attainable jobs.

City staff also see jobs at industrial sites as a means for maintaining a diverse economy. A diverse economy is important to creating a healthy economy, particularly for cities looking to attract businesses. For instance, economic development staff at the suburban community of Concord stated, “We want to be an importer of jobs [...] In order to do that, you can’t just be an office or retail destination; we want to have a diversified economy. To accomplish this, you have to provide land areas appropriately zoned for manufacturing, office, and retail businesses to successfully locate and grow. That type of balance allows Concord to be uniquely positioned to retain, expand and attract businesses.”

Regional supply chain. Furthermore, most city officials argued that industrial land is essential to maintaining linkages between businesses, supporting a supply chain that sustains the regional economy. An economic development expert stressed that a large share of goods and services have a local supply chain that is often ignored by decision-makers and invisible to the public. Staff at cities along the I-880 corridor described that many of the industrial businesses located within their jurisdictions, namely food manufacturers, are supplying same day delivery. Staff suggested that these businesses would not be able to relocate elsewhere, even in the more distant parts of the region, because travel times are so high that their services would not be viable. Furthermore, staff at cities with strong electronics manufacturing, such as San Jose and Fremont, argue that the immediate proximity to tech R&D and the ability to rapid prototype creates a backbone for Silicon Valley. A city official from San Jose contended that,

“We think that kind of proximity synergy and a lot of that institutional know-how is a reason why, in the most expensive place to do business in the country, we still have such a strong manufacturing presence. It’s not because we can provide a competitive cost. We’re not a low-cost region. But just because of that proximity and the value-add to the Silicon Valley ecosystem.”

Local revenue stream. Most city officials also value industrial businesses for fiscal reasons. Economic development staff from the City of Fremont stated that the city’s largest sales tax share comes from business and industry, not retail. Although prioritizing fiscal needs may preclude the development of other regional assets, namely housing, both city officials and economic development experts argued that the dialogue around the regional housing crisis needs to address how these two issues are not mutually exclusive. An economic development expert in the South Bay suggested that cities need to make money on land, via the sales tax, in order to build more housing and that “the balancing act to keep employment lands is a regional imperative.”

Current challenges for industrial land

Conversations with city officials and economic development experts highlighted a number of challenges that cities are currently facing in regards to their industrial land and businesses. While challenges inherently vary across the region's diverse landscape, the following issues were emphasized across multiple interviews.

- Market pressures
- Limited space
- Mixed-use districts
- Outdated zoning codes and policies
- Outdated infrastructure
- Environmental issues
- Talent attraction
- Internal city government resources and structure
- Political barriers and lack of a constituency

Market pressures. Industrial land is one of many uses that a city seeks to accommodate and plan for in their zoning codes. Ultimately, the market greatly influences the supply and demand for industrial space. City officials stressed two primary drivers of market pressure on industrial areas across the Bay Area: 1) the undersupply and demand for residential uses, and 2) the recent legalization of cannabis in California. Additionally, in the current market, city officials suggested that developers prefer to outprice industrial users and turn industrial land into R&D office space, versus trying to intensify a higher-value site that is designated for office uses.

Residential uses: Addressing the need for employment lands in the context of the current housing crisis is often not so easy in practice. For instance, San Jose city officials stated that they believe current real estate values for industrial spaces in their city include a premium within the cost of land, with the underlying assumption that at some point the city will allow residential on the industrial sites. Staff at the City of San Jose highlighted the challenges they face in preserving industrial land in this market, stating that “We’ve been consistent on holding the line on preserving industrial. But at the same time, we don’t really have anything that has enough teeth to [...] put our foot down and really make it 100 percent clear to the market that these areas are going to stay for production.” They have found this to be particularly true in industrial areas near residential, as developers could eventually generate significant profit on housing at some point.

The housing crisis in the Bay Area is a regional issue, yet the pressures are felt most strongly in the inner core areas. A conversation with the East Bay Economic Development Alliance (East Bay EDA) emphasized that the political climate around housing will pose challenges in the inner core for the implementation of the PPA program: “[The PDR sector] is not going to succeed just because you set up some rules. It’s going to succeed if you have housing, if you have proper training for the workforce, all of those things. If we didn’t have a housing problem, it’d be so much simpler. Before, if we wanted to get a city to think about preserving space for industrial, it was more about aesthetics. But now it’s really about whether there is enough housing [...] I think that’s really going to be tough to address.” Yet, it also is important to recognize that market pressures vary across the region. While inner Bay Area cities are experiencing pressure to convert industrial to housing; suburban cities are not necessarily undergoing a similar process.

“We’ve been consistent on holding the line on preserving industrial. But at the same time, we don’t really have anything that has enough teeth to [...] put our foot down and really make it 100 percent clear to the market that these areas are going to stay for production.”

– San Jose city official

Cannabis: The recent legalization of cannabis is directly impacting industrial land values across much of the Bay Area. Cannabis offers a much higher-value use compared to more traditional industrial uses; thus, speculation for cannabis uses is driving up land values and outpricing traditional users. An industrial land expert highlighted that in more suburban areas, such as Santa Rosa, the market pressure from cannabis is even higher than that of housing. The City of Santa Rosa has been a leader in regulating cannabis, as the city proactively adopted a comprehensive cannabis ordinance in December 2017, which went into effect in January 2018. Since 2014, Santa Rosa has experienced a drop from 12 percent vacancy to 5 percent vacancy in industrial zoning largely due to cannabis (City of Santa Rosa, 2018). The expert acknowledged that “no one has any real answer to ‘beating the market’ of escalation and speculation,” but that the City’s transparency around cannabis allows for awareness of the effects on land use balance, supply and demand.

Figure 5: New residential building in industrial area



New apartment building located near industrial uses in the Dogpatch neighborhood in San Francisco (image by author)

Other cities are also developing and refining their cannabis regulations in response to market pressures. While cannabis uses are willing to pay higher rents than traditional uses, some city officials suggested that cities should be clear about which types of cannabis uses are the most productive. For instance, economic development staff at the City of San Leandro stated that “Oakland is seeing a lot of warehouses turning into cannabis grow houses [...]. It’s not a great use of the land. It doesn’t have a lot of jobs, and [the workers] don’t get paid much. That’s something that a PPA needs to consider.”

Limited space. Staff at many local jurisdictions, primarily those located within the inner Bay Area, expressed that one of their biggest challenges is that they just don’t have enough space. They don’t have enough space for businesses, and they don’t have the space for the housing needed to accommodate the workers. This lack of space generated two main concerns regarding industrial land: 1) the inability to attract new businesses; and 2) the inability to retain and/or grow businesses. Retaining and growing businesses was mentioned in the context of startups. While startups often are attracted to the Bay Area, economic development staff in the East Bay stated that they have experienced the loss of industrial startups who need just a little space in the beginning, but who eventually leave the region once they grow and require bigger-scale production.

On the contrary, staff at the City of San Francisco cited the lack of space as a positive influence on the preservation of industrial land. A city official stated that due to its smaller amount of industrial land relative to other cities, “we recognize that we need to preserve it because otherwise it’ll be cannibalized by something else.” The same city official suggested that higher demand and pressure on these spaces eased the implementation of their industrial land program (PDR zones).

Figure 6: School located in industrial area



School crossing sign located next to a highway on-ramp near industrial uses in the Dogpatch neighborhood (image by author)

Mixed-use districts. City staff reported varying levels of success in their mixed-use industrial areas. Likely, this varies greatly according to the type of industrial use and the use it is mixed with. San Francisco has what they call “tradeshop” zoning that allows for light industrial in neighborhood corridors. Economic development staff reported that retail on site and increased foot traffic has been an asset for these manufacturing businesses. Staff at many cities have seen community uses, such as churches or schools, locate in industrial spaces because the land is less expensive than in other areas (Figure 6). Some city officials believe that this has been successful because there is limited land otherwise and they don’t want to prohibit these uses altogether. Staff at other cities have found the opposite, warning that “If you’re not careful, they’ll all end up in your industrial zones and then actually preclude heavier industrial uses from expanding over time and then the area slowly changes. That can be the bigger challenge, maybe even more than housing.” For instance, Santa Rosa has struggled with placing recently legalized cannabis businesses in their industrial areas where uses, such as schools, had been allowed in the past.

Outdated zoning codes and policies. City officials emphasized two main challenges associated with outdated zoning codes: 1) simplified zoning for industrial, and 2) lack of flexibility. Staff at the City of Hayward described how the blanket application of regulations for all industrial uses has posed issues for both the city and businesses. From the city perspective, the uniform regulations have limited the city’s ability to facilitate which uses they would like to see in their industrial area. From the business perspective, the blanket zoning has created

uncertainty about whether or not they are allowed in the industrial area, which poses a challenge for business attraction to the area. The City of Hayward is currently addressing this challenge through an update to their industrial zoning code that will clarify these ambiguities.

Furthermore, as the nature of industrial uses changes, some city officials expressed the desire for more flexible regulations. For instance, staff at the City of Fremont emphasized that uses, which were once separated, now occur under the same roof. They cited Tesla as a great example of this: “You’ve got PhD engineers at computers who are interacting with the line staff who are in the production areas, and they need to be collocated. And then they’re also shipping the product, that is under the same roof. And R&D used to be [collocated] until they outgrew the space.” The city officials stressed that they need to update their zoning codes to adapt to this trend. This would help to reduce the bifurcation of uses and accommodate developers who don’t want the city to be too prescriptive. In addition to zoning, the City of Fremont has been working on loosening up other requirements, such as parking, to ease the collocation of uses. Staff at the City of San Jose highlighted that the evolving nature of R&D from one-third office, production space, and warehousing to almost entirely office has not been incorporated into land use definitions. Failure to keep pace with the evolving nature of these businesses has created a number of problems, including the way their taxes are structured.

Outdated infrastructure. Much of the infrastructure supporting industrial spaces suffers from a lack of maintenance: buildings, roads, as well as fiber optics. All city officials stressed the disrepair of roads and the supporting goods movement infrastructure.

A number of city staff highlighted the outdated building functionality of rigid, large-scale warehouses. At a certain point, market values and land values will likely increase so much that the existing business will want to relocate. Staff at the City of Hayward stated that, “We’re already starting to see that. The base users are being priced out [...] We’re starting a lot of speculation projects. Developers have no idea who their tenants are going to be, so let’s make the buildings as flexible as possible.” Staff at the City of Pittsburg mentioned a 375,000 square foot building that was once attractive for heavier industry users, namely a spiral pipe company, for its high ceilings, roll-up doors, and rail spurs, but is now “one of those spaces that we’ve had people come in they want to take a portion of it, but not the full space.” City of Hayward staff actively acknowledge this challenge, suggesting that “if you break down that million square feet into multiple buildings on a site, [the developer] is achieving what they want and we’re getting longevity for reuse on these sites.” Other cities, such as Newark, are shutting out large-scale warehousing altogether and encouraging advanced manufacturing.

Furthermore, San Leandro city officials argued that infrastructure also should include internet connectivity. Access to high-speed internet is essential to many driving manufacturing industries, including biotech, food R&D, advanced manufacturing, and future uses. However, it is also important to consider that fiber optics also may open up real estate to other new uses that may compete with traditional industrial uses.

Environmental issues. Perhaps unsurprisingly, environmental issues associated with industrial uses were brought up primarily by cities with a larger existing, or historical, heavy

manufacturing base. Staff at the City of Pittsburg highlighted that “in general, the community is supportive of industry, but they want to see clean and safe industry, which is totally reasonable.” Additionally, underutilized land that was formerly occupied by heavy industry often poses many environmental remediation challenges. Thus, cities with available land are not able to easily adapt to other uses. A prior study found that the City of Richmond, a city with a high share of heavy industry, is concerned that “[PPAs] have the potential to ‘cement into place’ environmental hazards and burdens on a few select places – and that these places risk being those already most disadvantaged within the region” (St-Louis, 2016). The PPA program must recognize such concerns and consider how cities who bear a disproportionate burden from industrial uses could also benefit this policy.

Talent attraction. One of the major challenges for the PDR sector in the Bay Area is a shortage of workers. Most city staff attribute this issue to the high cost of living and the associated displacement of residents who are willing to work lower wage jobs, which are likely direct impacts of a housing supply deficit. A shortage of local workers was cited as a major issue for cities across the Bay Area, including both core and suburban cities. City officials in Petaluma emphasized that the land costs are not as much of an issue for industrial businesses, it is more the shortage of workers who can support industrial processing. Staff at many cities emphasized the two-hour plus “super commutes” that industrial workers are making from Central Valley cities, such as Stockton and Tracy, because they cannot afford to live nearby. The East Bay EDA cautioned that designating an area as industrial, when businesses cannot employ a local workforce, will not help the economy of the Bay Area. Thus, they suggested the larger question is, “how do you make the Bay Area a place that can sustain workers?” While the driving forces behind this issue can be an argument for converting industrial land to housing, maintaining and creating space for both workers and jobs is critical to supporting the regional economy. This issue is likely outside of the scope of the PPA program itself; however, recognizing these broader interrelated issues and determining how the PPA will interact with other related policies or programs will be essential to its success.

Internal city government resources and structure. Many cities around the Bay Area lack the resources required to conduct a needs assessment and regulatory updates for industrial land. San Francisco staff stated that their planning department conducted a significant amount of research prior to implementing their citywide industrial zones, and that being able to dedicate those kinds of resources to a similar effort would be challenging for some cities. In addition, city initiatives often suffer due to competing priorities. In the case of Santa Rosa, staff is primarily focused on rebuilding their housing stock post the fires that occurred in Fall 2017. Furthermore, an economic development expert suggested that a city’s management structure can greatly influence a city’s understanding of and strategy for addressing issues. For instance, they theorized that some cities have housing under the same management structure as economic development, and they tend to have a better understanding of the tradeoffs between these two issues; whereas other cities’ economic development staff is in the city manager’s office or another department that may be isolated from other inherently connected issues.

Political barriers and lack of a constituency. Politics play a strong role in shaping the conversation and action, or lack thereof, around industrial land. The rotating political cycles and the current focus on the housing crisis pose challenges for the preservation of industrial lands. San Jose city officials stated that they constantly have to educate new council members on San Jose’s predicament and challenges related to industrial land and why they have policies in support of these spaces. They stated, “it takes constant maintenance. We always have to be talking about this. We always have to be reminding and informing council. There’s no guarantee. It’s, I don’t want to say a battle, but we’re always having to tout the line and educate folks on why this is important. It’s a career.”

The current makeup of a city council will directly influence if a city chooses to embrace a policy. In the South Bay, an economic development expert said that “cities come in the flavor of we want jobs or we want housing; very few want both.” More often than not, politicians believe that these two interests are at odds, creating competition between the two interests rather than enabling them to work together. Given the pressures of gentrification and the lack of opportunity for a diverse population, elected officials are focused on the housing crisis. Experts suggest that elected officials may actively avoid endorsing the need for industrial land in fear of jeopardizing their political career. Consequently, industrial spaces often suffer from a lack of a constituency or consistent voice. Other advocates and users of industrial spaces are rarely involved in political issues and thus do not provide a voice for industrial land either. As a result, development often occurs in these areas of least resistance.

Overall, the challenges related to industrial land described by city staff signify a wide range of issues that the PPA program should seek to address. In response to each of these challenges, the PPA program should consider how to incorporate the following elements:

- Provide a sign to the market that particular sites are going to stay as PDR spaces.
- Leverage the lack of space as a reason to retain remaining industrial land.
- Determine if and where mixed-use industrial is appropriate.
- Create a linkage between the PPA program and economic development policies, particularly workforce development programs.
- Enable updates to zoning codes to allow for more modern and/or flexible uses.
- Provide infrastructure modernization support.
- Address environmental justice concerns to minimize disproportionate distribution of the burden from noxious uses.
- Provide additional resources needed to conduct needs assessments and regulatory updates.
- Minimize the political burden for local politicians.

Each of these elements provide a foundation for developing overarching goals of the PPA program. Many of these goals were emphasized by city staff as key reasons for wanting a PPA

program, as further described in the following section, and will ultimately shape the action items for this policy.

Reasons for wanting a PPA program

One of the primary goals of the conversations with city officials was to understand why a local jurisdiction would or would not be interested in a PPA program. Cities overwhelmingly expressed interest in the potential for funding to be channeled through the PPA program and directed into investments related to industrial uses in their cities. The majority of cities were also interested in the PPA program emphasis on employment, the idea that the PPA program could provide a platform for shared experiences or best practices, as well as its potential for elevating the profile, importance, and functionality of industrial lands across the region. The following descriptions provide more detail on these four elements of interest about the PPA program.

1. **Funding.** Perhaps unsurprisingly, cities found the potential for funding that would be linked to PPAs to be a primary attractor of the PPA program. The specifics about funding availability for the PPA program are not yet clear, yet the following ideas could guide decisions about what the program should fund. City staff suggested a variety of elements for which they would like funding. Some of these requests are likely outside the scope of the PPA program itself, but could be considered in tandem with other programs, such as the Economic Development District.

- a. *Planning, technical assistance, and staff.* A number of city staff expressed a desire for resources similar to the funding opportunities provided through the PDA program in Plan Bay Area, such as planning and technical assistance grants. Additional funding could assist cities in conducting assessments that they currently do not have the capacity or funds to complete, such as: 1) Conduct a detailed needs assessment of industrial businesses, what exists, sales tax revenue, and employment; 2) Bring zoning codes up to date to allow for evolving industrial uses; 3) Update the General Plan to reflect industrial land priorities; 4) Conduct regular outreach with relevant stakeholders, including the brokerage community.

Staff across most cities highlighted that they lack the resources to conduct desired updates to their planning codes that would protect industrial land. For instance, staff at the City of San Jose

“The basis for our zoning code was established in 2000 and hasn’t really undergone a significant update since then. That’s what has led us to this issue where we’ve seen this cannibalism within the existing industrial market.” – San Jose city official

stated, “The basis for our zoning code was established in 2000 and hasn’t really undergone a significant update since then. That’s what has led us to this issue where we’ve seen this cannibalism within the existing industrial market [...] It’d be great to take a comprehensive look at our industrial zoning regulations, our development

standards and our performance standards, and right-size some of those elements to the market as it exists today. That would be incredibly beneficial to continue industrial growth in the areas.”

- b. **Infrastructure.** Staff at most cities stated that the infrastructure that supports industrial uses is outdated and in poor condition. Recommendations included the following, provide transportation dollars to 1) Improve the conditions of roads needed to support high intensity goods movement industries. This could include regular maintenance, straightening out of priority truck routes, and street widenings; 2) Expand utilities such as high capacity water, sewer, electrical utility lines; 3) Install fiber optic infrastructure needed to support biotech, advanced manufacturing, food processing, and R&D; 4) Improve sidewalks and install bike lanes to improve amenities for workers.

Infrastructure improvements would help to support existing businesses and could help to attract new businesses. For instance, economic development staff at the City of San Leandro has experienced this with their new fiber optic network. An economic development staff person stated, “I can’t tell you that a single business has moved into San Leandro because of the fast fiber optics, but once they get here and they experience it, you can never go back. So, our infrastructure is giving us the confidence to stretch for businesses and investments that we wouldn’t have done in the past.”

- c. **Capital improvements for buildings.** Some city staff suggested providing funding for adapting or improving existing industrial buildings. Such adaptations could include transitioning a warehouse to higher employment uses. Additionally, new uses often require updated facilities; thus, tenant improvements could use assistance.
- d. **Internal money for businesses.** If possible, a staff at a few cities requested funding for internal business assistance, including hiring staff, purchasing or getting loans for equipment, and/or putting a down payment on a feasible site.
- e. **Workforce development programs.** Many city staff underscored the need for funding to create or improve workforce development programs. Such efforts could potentially be developed in coordination with the Economic Development District.

- 2. **Focus on employment.** The PPA program has the potential to fill a gap not addressed by the PDA program in Plan Bay Area: non-office jobs. Cities with a large industrial base emphasized that the PPA would provide a crucial complementary program to PDAs. Furthermore, cities outside of the urban core suggested that jobs, not housing, are of primary concern. For instance, staff at the suburban City of Pittsburg stated, “It’s funny, I go to all these planning forums around the Bay Area and they’re talking about, oh we need to build more housing. And I’m thinking, in the East Bay we have a lot of housing; we

need more jobs [...] I feel like Plan Bay Area doesn't really do a whole lot to address that issue specifically. If there's a way to really focus this around job growth that would be really good." Thus, the PPA provides an opportunity to address this regional disparity.

"It's funny, I go to all these planning forums around the Bay Area and they're talking about, oh we need to build more housing. And I'm thinking, in the East Bay we have a lot of housing; we need more jobs [...] I feel like Plan Bay Area doesn't really do a whole lot to address that issue specifically. If there's a way to really focus this around job growth that would be really good."

– Pittsburg city official

- 3. Toolbox of best practices.** Most city staff expressed an interest in the potential for the PPA program to provide a means for sharing best practices region-wide. The BAUM Initiative has begun this conversation among small-business manufacturers. The PPA could continue to build upon the BAUM Initiative's effort, while also broadening the scope to include other industrial uses. Staff at some cities with existing industrial land preservation programs emphasized that this would not be a strong enough attractor for them, they would need something more.
- 4. Elevate the profile of industrial land.** Staff at many cities emphasized the importance of the PPA program in framing the importance of industrial land. This could assist in political battles as well as with investments. One city official suggested that the PPA program could attract investment, especially to older districts, if the users, owners, or potential buyers knew the land was designated as a PPA. Effectively, it could serve as a signal to the market that these are areas ripe for investment.
- 5. Value of a regional framework.** A regional industrial land program would bring awareness to the state of industrial uses and best practices in other cities, help to ensure the competitiveness of the Bay Area region relative to other regions, and provide more legitimacy to a city's argument for preserving industrial land. As an industrial land expert noted, "not every city is going to have its proper portion of industrial [...] yet regionally we'll need a balance." A regional framework will enable cities to coordinate industrial land use decisions to the extent possible to create a regional balance. City officials and experts described a number of reasons why they find value in a regional framework, as highlighted in the quotes on the next page.

"not every city is going to have its proper portion of industrial [...] yet regionally we'll need a balance."

– industrial land expert

City officials support a regional framework

"I think anything that we can reference to give us a little bit more leverage when we're kind of holding the line on preserving our industrial space. Something that we could use that gives it a little more teeth I think is really helpful. It adds more legitimacy [...] it's not just San Jose going into this fight alone, but it's something that the broader Bay Area is adopting in some form or another. I don't want to speak for everyone, but sometimes it feels like we're going into this fight alone on holding the line on industrial."

– San Jose city official

"We're just one piece of it and I do think the regional approach is probably long-term our best bet. Especially in competing with other regions who are already ahead of us. There's going to be a certain point, where right now we have a competitive advantage that we have access to the talent. If we can't figure out how to take care of housing, transit, we won't have it for very long and all of these companies will start relocating."

– Hayward city official

"We're only going to be as successful as other communities who are having the same success that we are [...] if we're only reliant on what happens within our borders, that's just not realistic."

– Fremont city official

"It'd be great to have uniform language and head off the incompatible land uses up front and not the city being a bad guy. A set of best practices or ordinances and policies that could be provided around incompatibility of uses would be helpful. The regional agencies should play a more candid role in this anyway."

– economic development expert

"BAUM has emphasized how the issues are regionalized and I think I underestimated how similar we are in terms of our issues around industry [...] It's interesting that I found more communities to be like us in terms of their needs and issues than unlike us."

– Santa Rosa city official

Reasons for not wanting a PPA program

Local jurisdictions also expressed a few hesitations in regards to the PPA program, including feeling locked into industrial uses, duplication of existing industrial zoning or protections, and political misuse of the policy.

- 1. Feeling locked into industrial.** A few city officials were wary that the PPA program could lock them into uses that may not be beneficial for the city or property owners in the future. In particular, property owners could potentially generate more revenue from other uses in neighborhoods where uses are in flux, such as West Oakland. More broadly, some city staff

"I just wouldn't want anything to impede our ability to change as other things change. The city is changing. And the region is changing. I wouldn't want anything to make it harder for us to change in our own way with it."

– Pittsburg city official

expressed that they do not want to be inhibited from keeping pace with surrounding change. For instance, staff at the City of Pittsburg stated, “I just wouldn’t want anything to impede our ability to change as other things change. The city is changing. And the region is changing. I wouldn’t want anything to make it harder for us to change in our own way with it.”

- 2. Duplication of existing industrial zoning or protections.** Many city officials stressed the fact that they already have zoning, or in some instances they have industrial protections in place, and that they do not want to add another layer that will complicate existing mechanisms. Staff in both urban and suburban areas expressed this concern. For instance, economic development staff at the City of Pittsburg stated, “When there was this push to do this standardized industrial zoning for these different cities, it was like well, we don’t really need that. We have zoning that’s already in place. It’s like an added effort that we don’t really need in order to incentivize industrial users here.” In addition, staff at the City of San Francisco questioned the added-value of the PPA program: “What added protections or benefit are the industrial areas getting beyond what the PDR zoning is already doing? What are the mechanics? How is that strengthening it? We don’t want to duplicate efforts.” Furthermore, cities that currently aren’t facing much pressure to convert industrial lands to other uses, such as Petaluma, value the flexibility of their current zoning and suggested that an additional layer may not be necessary.

“What added protections or benefit are the industrial areas getting beyond what the PDR zoning is already doing? What are the mechanics? How is that strengthening it? We don’t want to duplicate efforts. We have mechanisms to protect against.”

– San Francisco city official

“When there was this push to do this standardized industrial zoning for these different cities, it was like well, we don’t really need that. We have zoning that’s already in place. It’s like an added effort that we don’t really need in order to incentivize industrial users here.”

– San Francisco city official

- 3. Political misuse.** A city official cited the occasional misuse of PDAs at a local level that favors a politician’s career rather than the community at stake. They cautioned that a PPA could be subject to similar misuse, and that a system of checks and balances should be used to ensure the program goals are being met, as described in the following quote.

“I’ve seen [PDA] projects that were intended to help underserved populations get turned into political pet projects, or to help somebody get elected, when in fact it sounded on paper that it was a great benefit for the residents. Or it turned out to be diverted to some other thing, whether by design or not. That’s the trouble with these kinds of districts. It’s one thing to target need. It’s another to distribute the funds effectively. That’s something to think about.”

– City official in the Bay Area

Criteria for designating a PPA site

Another goal of the conversations with city officials was to understand the criteria cities would use to designate a PPA within their city. Most interviewees did not suggest concrete metrics, and many were hesitant about being too prescriptive with specific criteria given the variation in industrial uses and associated needs. Some interviewees suggested that criteria are useful in research, but may not be the best approach in practice. This concern may have been biased from the economic development perspective, as interviews with planners in the room tended to generate more ideas about criteria.

Despite the speculative concerns about developing criteria, some city staff suggested a handful of criteria that could be used for designating PPAs. The specific criteria fall within a set of broader categories:

- Location characteristics (e.g. lack of land use conflicts, industrial district vs. integrated)
- Condition of nearby transportation infrastructure (e.g. underserved infrastructure needs, street grade, accessibility to major transport routes)
- Quality of life (e.g. air pollution)
- Economic value (e.g. density of jobs, sales tax revenue)
- Equity (e.g. disproportionate burdens)

A key issue that was not explicitly mentioned during conversations with cities was climate change. In addition to the above categories, ABAG-MTC must also acknowledge risk zones by incorporating resiliency criteria such as sea level rise.

Research to date has recommended a range of criteria for evaluating if industrial land should be preserved or converted. Two studies in particular provide useful frameworks that could guide the development of criteria for the PPA program: 1) Chapple’s *Industrial Land and Jobs Study*, and 2) a report produced by UC Berkeley Transportation Studio in Fall 2017 on goods movement and its associated industrial spaces in the Northern California megaregion (da Silva et al, 2017). Chapple suggests using characteristics related to transportation, economy, equity, land use or zoning compatibility, environment, and adequacy of supply (Figure 7). Da Silva et al. proposes a framework that integrates equity throughout, emphasizing three primary goals: 1) leverage sites for equitable economic development; 2) promote health and safety for workers;

and 3) encourage sustainable transportation choices. The framework proposed by da Silva et al. is included in Appendix IV. The categories of criteria suggested by city staff generally align with the overarching frameworks proposed in the two aforementioned studies. Going forward, ABAG-MTC could critically examine Chapple and da Silva et al.’s suggested frameworks in conjunction with the criteria recommended by city staff to develop a set of criteria for designating a PPA site.

Figure 7: Proposed criteria for industrial land preservation or conversion (Chapple 2017)

	← RETAIN AS INDUSTRIAL	→ CONVERT TO RESIDENTIAL OR MIXED-USE
Transportation	<ul style="list-style-type: none"> Proximity to freight and/or port facilities Low VMT for workers on industrial land 	<ul style="list-style-type: none"> Proximity to transit High VMT for workers on industrial land
Economy	<ul style="list-style-type: none"> Production or related employment Proximity to business clusters/suppliers/markets Critical supplier to local businesses Industry stable or growing 	<ul style="list-style-type: none"> High-density non-production employment Proximity to markets/customers Limited linkages to local economy Industry in decline
Equity	<ul style="list-style-type: none"> Offers middle-wage jobs for less-skilled workers 	<ul style="list-style-type: none"> Potential for affordable housing
Land use/zoning compatibility	<ul style="list-style-type: none"> Surrounded by medium/heavy industrial zoning 	<ul style="list-style-type: none"> Adjacent to residential
Environment	<ul style="list-style-type: none"> Brownfield site, remediation infeasible 	<ul style="list-style-type: none"> Environmental health hazard for surrounding communities (especially if historically disadvantaged)
Adequacy of supply	<ul style="list-style-type: none"> In areas with projected deficit of industrial land Low vacancy rates for industrial buildings 	<ul style="list-style-type: none"> In areas with projected surplus of industrial land High vacancy rates for industrial buildings

Best practices

City staff highlighted a number of examples of best practices that have supported industrial land in their cities that may be applicable to other areas. The best practices that were discussed primarily included a range of land use controls that have been effective in preserving industrial land and increasing productivity on these sites.

Given that ABAG-MTC does not have authority over land use controls, these best practices would not be directly incorporated in the PPA policy itself. Rather, they provide ideas that are complementary to the PPA program that could help to ensure a thriving PPA. The PPA program could leverage and/or encourage best practices. For instance, if the program is setup based on a points system, cities could receive bonus points in the program if they are doing a certain number of these so-called best practices. Or, if a city designates areas as a PPA, they could benefit from receiving access to an online guidebook with a set of best practices from around the region.

The following list includes examples of best practices that were discussed during the interviews with city officials.

Develop citywide industrial preservation regulations or policy. San Francisco developed its PDR zones in the early 2000s. The [PDR zones](#) provide protection for PDR activities through

zoning. San Jose adopted a [Framework for Preservation of Employment Lands](#) in 2007 that required the complete replacement of all converted industrial sites in response to tremendous pressure the city experienced to convert these lands after the 2008 economic downturn. In 2011, the city incorporated this policy into its General Plan.

[Update business license and other fees](#) to incentivize the productive use of industrial areas and appropriately reflect their impact on City infrastructure and services. In San Leandro, the business license fee for warehouse, wholesale, and distribution businesses has been updated to be based on the square footage of the business, rather than the number of employees, with \$100 per 1,000 feet charged. Warehouse, wholesale and distribution businesses cause heavy wear on local streets through truck and delivery traffic, but generate relatively few jobs and limited business license revenue or sales tax. In this way, the business license fee is better aligned with the impact of the business, much of which comes from the physical size rather than the number of employees.

[Bring preliminary reviews upfront in the development process.](#) Pittsburg has done this with controversial projects so they are addressed by staff and key decision-makers early on in the process.

[Cross-subsidize industrial uses with office revenue.](#) Through its PDR zones, San Francisco has initiated an innovative funding mechanism to simultaneously encourage mixed-use and maintain industrial uses. In 2014, the San Francisco Planning Commission and Board of Supervisors approved a [zoning strategy](#) that requires 33 percent of a new development in PDR zones to be maintained for manufacturing, the construction of which would be supported by a [cross-subsidy](#) from collocated office development.

[Loosen parking requirements.](#) Fremont is working towards creating more flexible parking requirements tied to developments. This would enable businesses to collocate more easily than they do under the current more rigid parking rules.

[Create industrial sub-districts.](#) Hayward's current industrial zoning applies a one-size-fits-all standard to its wide range of industrial uses. As a result, land nearby residential is subject to the same regulations as land buried deep in their industrial area. The city is undertaking a process to [update their industrial land use regulations](#) to create sub-districts and different land use and development standards unique to each sub-district. These sub-districts will consider proximity to other uses, water, sensitive resources, the I-880 corridor and catalyst sites. They will allow the city to support uses they see as beneficial to the community and discourage those that are not.

[Zone for transitional areas.](#) San Leandro has created industrial transition zones near BART stations that allow for some residential and commercial. A potential benefit of these zones is that they will allow for more commercial in the industrial zones to serve industrial uses.

[Require conditional use permits.](#) San Leandro requires conditional use permits that necessitate developers to show that a building in an industrial zone will be flexible and can take multiple types of uses, allows for heavier parking if needed, includes a higher quality design that will attract more employee intensive uses, and includes better utilities.

[Master plan for larger industrial sites.](#) Hayward has started creating master plans for larger sites in order to plan for the industrial area more comprehensively. This will encourage buildings to be built in a manner that allows for amenities such as trails, bike connections, sidewalks, and commercial uses that older, traditional industrial buildings lack.

[Invest in supporting infrastructure.](#) City staff at Petaluma stated that she believed upgrades to waste water treatment plants and to freeway interchanges have been instrumental in supporting industrial employment lands in their city. Yet, it is important to consider the tradeoffs of investing in one infrastructure project over another project when prioritizing investments.

[Ensure diversity of industrial tenant mix.](#) Fremont has taken a holistic, supply chain approach to their industrial areas, the idea being that a city needs a little bit of each type of industrial use (ranging from warehouse at the bottom of the hierarchy to R&D at the top). They believe that industrial businesses thrive when all parts of the hierarchy exist at one location. They recognize that they have more industrial land and are perhaps more stable than other cities that may not have the “luxury” of being able to accommodate a wide range of industrial uses.

[Identify a champion of industrial land.](#) Cities that have been successful in pushing forward industrial preservation policies have had very strong political support. For example, Hayward’s City Council felt very strongly that industrial needed to “remain a staple and strong part of the City of Hayward’s economy” during their most recent General Plan update. In addition, economic development staff at the San Francisco described the importance of Mayor Lee’s role in supporting the development of PDR zones, “Our Mayor also came out and created a [5-point PDR plan](#). Having a really strong advocate that starts from the top is a big deal because it sets the directive for the rest of the city. Having buy-in from all levels of government increases our chances for success.” Overall, strong leadership and political support has been found to be critical in the implementation of industrial preservation policies.

“Having a really strong advocate that starts from the top is a big deal because it sets the directive for the rest of the city. Having buy-in from all levels of government increases our chances for success.”

– San Francisco city official

[Develop a marketing/branding strategy.](#) Staff at many cities view the Fremont Innovation District as a model example of an industrial success story in the Bay Area. A key element to its success has been the city’s marketing and rebranding of industry. The city has worked with consultants to develop marketing materials that unify its industrial area, such as window decals and publicly accessible branding that businesses can access through the city. Such materials have helped to create a sense of self-identity and rebrand industrial space in Fremont. City officials described how these are simple tools that could positively influence industrial around the region: “These are things that I think could really carry over to the PPA. It doesn’t take a lot to really make these areas more visible, for people to take pride in them. We went from a situation where people were sort of embarrassed about our industrial space to really being

proud of it.” They believe that this type of exercise helps to bring more visibility to the PDR sector and attracts tenants to the district based on reputation rather than by cost default.

Assist businesses in finding industrial space. Most cities do not have money for formal programs or incentive packages to attract businesses. Staff across jurisdictions explained that they try to provide as much information to industrial businesses as possible to help them make a business decision. They all emphasized the importance of transparency, being upfront, and predictability throughout the process.

PPA program policy goals

Conversations with city officials and economic development experts generated some preliminary ideas about the eventual form of the PPA program. According to interviews with planning and economic development staff, two high-level requirements for the program are clear. First, city staff and experts suggested that the program be voluntary and non-binding, and that it should not take away local decision-making power. Second, they suggested that for the voluntary program to be successful, it must be linked to incentives, namely funding.

Some experts cautioned that the program not be too specific in its designation criteria or geographies, so as not to reduce the authority of local jurisdictions. An economic development expert at the East Bay EDA suggested that a program that is too specific would infringe on local control and also ignore the nuanced differences between the needs of industrial businesses: “I think the PPA could be successful depending on whether it’s a choice for local officials and whether there are incentives involved, like additional funding [...] it could work that way, but if it’s something that tells local officials that you need to designate an area and it has to have these characteristics, it’s going to be difficult. Not only because it takes away the ability of local officials to make these land use decisions, but also because manufacturing, if you go from biotech to making cookies, I mean the requirements are so different that you have to be very careful in how you define this.”

Furthermore, the PPA program provides an opportunity to develop an investment strategy for industrial land region-wide. The PPA program could assist businesses in accessing state or federal funds that lack sufficient technical assistance. For instance, industrial businesses have reported challenges in accessing the California Competes Tax Credit; yet, those who have accessed it have found it very useful. The PPA program could provide support in accessing funds such as these, as well as provide a comprehensive landscape of incentives to businesses.

City officials referenced a few former state programs that could serve as inspiration for the PPA program. The Enterprise Program under the California Department of Housing and Community Development designated zones in economically distressed areas across the state, providing incentives designed to encourage business investment and promote job creation. The former Redevelopment Agencies in California assisted with cleanup of contaminated sites and helped fund construction of affordable housing. Lessons could also be learned from agricultural land protection policies. Both industrial and agricultural lands represent land use uses that are essentially finite and, once converted to “higher value” uses, cannot easily be restored.

The PPA program also provides an opportunity to create a contingency plan for when market pressures change. An economic development expert highlighted the lasting impact of the housing market boom and bust on industrial land in the early to mid-2000s. They stated that the housing boom in 2003-04 led to an incursion into industrial land by homebuilders, some of which were built, but some of which were never completed due to the economic downturn of 2008. As a result, a short-term shift in the market “left a real gouge in industrial land supply” that will likely not be repaired. San Francisco city staff also highlighted how some industrial lands were illegally converted to office during the economic downturn in 2007-08. Ups and downs are inevitable in the cyclical nature of the economy; thus, the PPA program must consider resiliency for industrial uses throughout uncertain changes in the market.

The PPA program would create a platform that could be leveraged to achieve larger policy outcomes. This larger effort could be brought to the state or federal level to advocate for infrastructure dollars on the basis that the region is recognized as a distribution hub. Or, perhaps the State of California could earmark funds for certain industrial businesses or projects. Additionally, the PPA program could consider how to stimulate the growth of new industrial firms and spaces. While the goal should be to maintain existing industrial land, the program could go beyond preservation and look to create new industrial, particularly in cities that have some protections in place already.

Transportation Considerations

Reliable transportation access to and from industrial land is critical to supporting industrial businesses, the larger supply chain in which they function, and the quality of life for workers in the PDR sector. Staff from all local jurisdictions emphasized that they are in need of transportation infrastructure improvements for both goods and workers. Since Plan Bay Area integrates transportation and land use management into its long-range plan in an effort to meet greenhouse gas reduction targets, the transportation needs associated with industrial lands could be a central component of the PPA program, an action item of Plan Bay Area. The following sections discuss how the PPA program could address both goods movement and worker access.

Goods movement

In February 2016, MTC released its San Francisco Bay Area Goods Movement Plan that underscores the importance of effectively moving goods within, to, from and through the Bay Area. The PPA program provides an opportunity to address goods movement access to and from industrial businesses, which is integral to achieving both regional and local goals. Goods movement land uses not only include those directly related to the distribution of goods – such as warehouses, distribution centers, and fulfillment centers – but they also indirectly include those that produce or receive goods. In other words, all PDR uses play a role in the larger goods movement system. Goods travel via a variety of modes: roads, rail, air and water. The majority of staff at local jurisdictions emphasized challenges associated with trucks traveling within their communities. Trucking often presents challenges for local jurisdictions as the majority of freight

within the Bay Area travels via truck and most last-mile journeys to the urban core occur on truck.

On a high-level, one of the requirements or benefits of the PPA program could be to create a transportation plan for goods movement travel within, to, and from industrial areas. The goods movement plan could focus on the recommendations discussed in the following section, which were identified during conversations with city staff. Furthermore, the goods movement system will be directly influenced by emerging technologies, such as automated trucks; the impacts of such technological advances should be considered when planning for the future of transportation near industrial sites. Also, as mentioned in the previous section on reasons for why cities would want a PPA program, local jurisdictions emphasized the need for the PPA program to provide funding, or at least facilitate enhanced access to funding, for goods movement infrastructure projects.

Recommendations for goods movement

Update truck routes. A common challenge highlighted by city officials is that truck routes are often in disrepair and are not positioned in an effective manner. Staff at the City of Petaluma highlighted that federal standards allow for longer trucks than some older roads are able to accommodate. They cited this as a major challenge for many of their industries located on roads that were built decades or even over a century ago. Consequently, even though they have identified special trucking routes, the last-mile of the trip may not occur on a truck route and inevitably poses challenges for the distributor, nearby traffic, and neighbors.

Many of the smaller truck trips for last-mile e-commerce tend to occur on local roads that are not dedicated to truck travel. As a result, this increased travel is likely deteriorating local streets and generating harmful pollutants in these communities (O'Brien, 2017). Furthermore, truck routes for long-haul truckers also pose a problem, particularly in the more suburban areas of the region. According to a conversation with planners at San Joaquin Council of Governments, truckers themselves have indicated that one of their greatest complaints is the location of Surface Transportation Assistance Act (STAA) routes, a national network that includes the Interstate system and other designated highways for large trucks. The STAA network has many gaps statewide and the enforcement of these routes is often sporadic. The PPA program could facilitate the designation of truck routes and the improvement of their condition nearby industrial sites.

Incentivize urban consolidation centers (UCCs). The last-mile trip often poses challenges for local jurisdictions. Large trucks on local roads create safety and health hazards for communities and accelerate the deterioration of the roads. Large trucks are not only used by large businesses, but staff at the City of Petaluma noted that even small businesses typically use larger trucks that are shared with other businesses. Consequently, trucks must travel down roads that may not be able to accommodate them. The PPA program could prioritize and/or subsidize industrial sites that contain UCCs. UCCs provide receiving points for goods located near urban centers; these centers minimize large truck travel into the urban core and

encourage the use of more sustainable options, such as electric vans or cargo cycles, for the last leg of a trip (RPA, 2016).

Reduce residential encroachment near heavily trafficked sites. The siting of residential uses nearby goods movement facilities creates challenges for both parties. Residents suffer from noises associated with pick-ups or deliveries (e.g. truck back-up beepers and general trucking noise), as well as increased emissions. Meanwhile, trucking companies and industrial businesses are affected by constraints imposed by local complaints. Due to extreme congestion on the region’s highways, staff at the City of San Leandro mentioned that businesses have fought for the right to operate during off-hours because if they travel during the peak hour their trucks will be caught in heavy traffic. San Jose staff highlighted that more traditional goods movement-oriented uses have been pushed out by competing uses (e.g. residential) because they cannot conduct operations outside of 7am-8pm. Accordingly, they suggested that “the biggest challenge we’ve had around goods movement, and this is in part our own fault, is where we’ve butchered these industrial areas and residential has been allowed on the periphery. Those tend to be the access points to major arterials or freeways.” The PPA program could reduce such conflicts by indicating that these sites are to remain industrial and thus serving as a signal to the market.

“The biggest challenge we’ve had around goods movement, and this is in part our own fault, is where we’ve butchered these industrial areas and residential has been allowed on the periphery. Those tend to be the access points to major arterials or freeways.”

– San Jose city official

Encourage a shift from truck to rail.

A typical container train can haul the same load as 100 trailer trucks and a unit train takes 120 trucks off the road; thus, a shift from truck to rail has the potential to remove many trucks from already congested and deteriorating roads (ITS, 2017). As a result, rail has the potential to reduce congestion and pavement degradation, reduced emissions, reduced health care costs from lower pollution rates, and fewer crashes (ITS, 2017). However, rail alternatives would not eliminate trucking altogether since the major of last-mile trips occur on trucks. Thus, land use decisions for industrial sites must be made strategically so as to avoid creating more truck traffic to and from rail terminals. The PPA program could prioritize sites that are located near rail right-of-way or intermodal terminals, and/or encourage businesses that generate higher volume traffic to locate in these areas.

Worker access

Conversations with city officials across the Bay Area identified a number of challenges that local jurisdictions face in providing effective last-mile connections to industrial employment centers. The fact that the PPA program is under development provides an opportunity for ABAG-MTC and local jurisdictions to consider how some of these challenges could be addressed through regional policy. Given that the intent of the PPA program is to maintain and grow middle-wage employment centers, access to these jobs is a basic need for both the workforce and businesses that could be addressed by the final policy.

Staff at the majority of cities interviewed stated that they believe traditional regional and local transit options (e.g. BART and local buses) are incompatible with industrial land due to the dispersed land use patterns and low densities. Consequently, workers in the PDR sector often must default to commuting by automobile. Since automobile ownership costs are high, and there may not be another alternative provided to access the site, the lack of an affordable commute option may preclude low or middle-wage workers from accessing a job opportunity on an industrial site. City officials also emphasized that even where transit options to industrial sites exist, the service often is not available or frequent enough during irregular shift hours that are common for industrial businesses.

In addition, transportation issues are often a result of regional pressures that cities cannot solve individually. Staff from most jurisdictions stated that their workforce commutes from across the Bay Area region and even from places outside the region, such as the Central Valley. For instance, economic development staff from the City of San Francisco stated, “For the workers, it’s really challenging. We have a Transit-First Policy and want to encourage biking and riding public transit, but a lot the jobs are in the industrial areas that are not always easily accessible by public transit. The reality is that the workforce is Bay Area wide.” In addition, conversations with city staff revealed that most cities do not have a comprehensive understanding of where workers are commuting from specifically, which makes it difficult for them to assess and solve transportation issues on their own.

“For the workers, it’s really challenging. We have a Transit- First Policy and want to encourage biking and riding public transit, but a lot the jobs are in the industrial areas that are not always easily accessible by public transit. The reality is that the workforce is Bay Area wide.”

– San Francisco city official

All interviewees emphasized that a lack of funding and resources restricts their ability to provide last-mile connections to industrial employment centers. For instance, staff at the City of Hayward mentioned that their transportation department had hired a consultant to identify some potential shuttle routes to their industrial district, but ultimately the fiscal model did not work out for the city. In addition, the study also had examined peer systems, many of which are located in the Bay Area, and identified that a key challenge for all of them “is achieving a sustainable funding source beyond the initial start-up grant” (Fehr & Peers, 2017, p. 76). A staff person at the City of Concord also was hesitant about shuttle services, since they have seen shuttles attempted in the past and found that they are difficult to sustain unless there is a big user. Generally, city staff stressed that shuttle programs are infrastructure intensive and expensive, and public funds to cover operations typically do not exist.

City officials discussed a few different types of last-mile mobility options that could improve access to industrial sites, primarily shuttle services, as well as bicycle lane and pedestrian improvements. The following sections discuss findings about each of these potential last-mile solutions and how the PPA program could address last-mile issues for workers.

Shuttle services

Shuttle services between transit stations and industrial employment centers offer a last-mile alternative that is not necessarily new to cities. Staff across the majority of local jurisdictions mentioned that their city and/or PDR firms located within their city have either studied or currently operate a shuttle that connects local transit stations and industrial sites. Cities and firms have attempted a range of institutional models for providing shuttle services within existing fiscal constraints. These services have taken on a variety of forms; they have been operated and funded either by the public sector, private sector, or via a partnership between the two. Staff at a few cities also mentioned that they have studied non-traditional, innovative last-mile solutions, such as transportation network companies (TNCs) or microtransit services. Appendix IV includes a set of case studies that highlight a range of institutional arrangements for shuttle services that were mentioned by city officials.

Most city staff stated that public transit services often require existing infrastructure and/or services, and resources in terms of funding and staff that most jurisdictions do not have. In addition, private services tend to require a big user and may ultimately offer inequitable services that merely cater to their employees and can be unreliable in that they can easily cease to exist with little notice to users. Given the challenges of a purely public or a private model, a public-private partnership (PPP) may be the most appropriate model for providing a shuttle service in most jurisdictions.

Interviews revealed a few different types of PPPs that have been considered or currently exist in jurisdictions across the Bay Area. Private partners could include on-demand or flexible shuttle services, business improvement districts (BIDs), developers, or business owners. Such partnerships may encounter challenges. For instance, PPPs require accountability to and buy-in from private partners, which may limit services. Also, PPPs do not necessarily guarantee effective operations, such as services outside the traditional peak hour and high frequency, and ongoing contributions from private partners may be difficult to maintain in a voluntary model. In addition, non-traditional TNC or microtransit services may face pushback from traditional public services, even if they are found to provide a more cost effective and efficient service. However, the benefits of providing this type of service over a public or private service may outweigh these costs in particular circumstances.

Bicycle and pedestrian infrastructure

Staff at a number of local jurisdictions suggested that they would like increased bicycle and pedestrian amenities to improve connections to, from, and within their industrial areas. Active modes of transportation can provide a viable last-mile connection for workers traveling via transit or those who live nearby their work. City staff also suggested that bicycle and pedestrian infrastructure are attractive amenities that can attract businesses and workers since workers will enjoy them during lunch breaks and/or before and after work. Furthermore, bicycle and pedestrian improvements support other infrastructure improvements, such as improved transit services, where workers still need to travel their final steps or pedals from a transit stop to their job site.

Figure 8: Bike share located nearby industrial businesses



Ford GoBike station in West Berkeley industrial district (image by author)

Some cities have bicycle-pedestrian improvements underway. For instance, the City of Hayward staff mentioned that they are planning a bicycle-pedestrian bridge that would go over I-880 and connect the Warm Springs BART station with the industrial area west of the highway. The design and engineering for the project is funded; however, the construction will require additional funding. More amenity-based planning for and implementation of active transportation infrastructure is ongoing in a handful of cities. San Leandro is looking into streetscaping and bicycle work in industrial areas “to support placemaking and next generation work places.” South San Francisco is working on improving the Bay trail in Oyster Point; Hayward staff also emphasized connections on the Bay Trail. In addition, most cities cited incomplete sidewalks and missing or unmarked crosswalks within their industrial areas that need repair.

However, while biking and walking to work may sound attractive, cities must thoroughly examine whether or not active commutes are suited for their industrial districts and employees. Bicyclists and pedestrians may face a series of challenges in doing so, and the supporting infrastructure may also pose challenges for the industry’s goods movement system. For instance, many industrial shifts occur during off-hours; biking to or from the night shift may not be an attractive or safe option. Also, bicyclists and pedestrians may simply feel unsafe traveling in an aesthetically unpleasant environment and in close proximity with trucks. From the goods movement perspective, bicyclists and pedestrian infrastructure may stifle their operations. For instance, the West Oakland specific plan includes bulb outs and bicycle boulevards on truck

routes. Going forward, decisions about bicycle infrastructure placement must be intentional and clear about who they are intended to benefit.

Recommendations for last-mile access

The PPA program provides an opportunity to address last-mile access for workers traveling to industrial businesses that operate within the regional economy. The following recommendations, which were developed based on conversations with city staff, could inform a transportation component of the PPA program.

Require comprehensive, multi-modal planning that would acknowledge the tradeoffs between different types of last-mile options. In some places, shuttle services may be a better option than active transportation, and vice versa. A comprehensive plan would require cities to prioritize between modes.

Set guidelines based on lessons learned from case studies. These guidelines could encourage institutional arrangements for last-mile shuttles that would provide targeted services that meet the needs of industrial businesses and employees. The regional framework of the PPA program would allow for a more holistic set of guidelines that cities on their own would not necessarily recognize.

Provide funding for at least some aspect of last-mile access improvements. Although the specific opportunities available for funding are not yet clear, funding opportunities such as planning and technical assistance grants, similar to those provided through Plan Bay Area's Priority Development Area (PDA), could be linked to the PPA program. In addition, given ABAG-MTC's role as a transportation planning and financing agency, some of the agency's federally allocated transportation funds could be directed towards transportation connections that facilitate improved access for workers commuting to industrial employment centers.

Going forward, the PPA program should consider last-mile solutions in the context of a comprehensive transportation plan that examines the needs for both people and goods, as well in the context of the PPA's broader goals. Shuttle services and bicycle and pedestrian improvements are just a few approaches to last-mile connectivity; other solutions should be considered. Furthermore, a focus on last-mile connections alone will not address the needs of those who do not live near transit. Also, the last-mile approach also may not be suitable for more suburban areas that lack robust regional transit options. In addition, all jurisdictions reported that workers travel to jobs in their jurisdiction from faraway places since they cannot afford to live nearby. This challenge brings up the interconnectedness of the high cost of living and workforce challenges across the Bay Area. Given the broader economic development goals of the PPA program, the policy could attempt to address this challenge by aligning with a jobs to housing goal for communities with a large share of affordable suburban housing, but whose workforce commutes long distances to find middle-wage jobs. Overall, the PPA program could support the planning for and provision of improved last-mile access as one element of a transportation component that should acknowledge broader accessibility and policy goals.

Conclusion

Interviews with planning and economic development staff expressed interest and emphasized the value of a PPA program from their perspectives. City staff emphasized that industrial land enables employment and economic development through middle-wage job opportunities and maintaining a diverse economy. They also argued that industrial land is critical to supporting the supply chain that sustains the regional economy, as well as generating revenue that supports their local economies. Yet, despite these benefits, city staff stressed a number of challenges for industrial land, including market pressures and competition with other uses, limited space, mixed-use districts, outdated zoning codes and policies, outdated infrastructure, environmental concerns, talent attraction, internal city government resources and structure, political barriers, and a lack of a constituency.

The PPA program provides an opportunity to address at least some of these challenges. City staff emphasized the value of the PPA program in providing a regional framework with messaging that will elevate the profile of industrial land and help garner support around maintaining and improving these spaces. Staff also stressed the importance of the PPA program in focusing on employment and addressing a critical gap in the existing PDA program. In addition to messaging, staff underscored two more tangible means for addressing the aforementioned challenges: 1) funding, and 2) a toolbox of best practices from around the region. Funding would enable better planning at both local and regional scales, better access to resources, and investment in outdated infrastructure. Furthermore, given the complexity of transportation challenges around industrial sites, one of the requirements or benefits of a PPA program could be to create a transportation plan for industrial areas that would cohesively address both goods movement and worker access. Table 2 demonstrates how each of the challenges highlighted by city staff translates into potential goals for the PPA program, and how these goals could be addressed in a manner that is in line with reasons that city identified as benefits of a PPA program.

The PPA program itself will have its challenges. City staff expressed a few concerns regarding the program, including feeling locked into industrial uses, duplication of existing industrial zoning or protections, and political misuses, and experts cautioned that the program should not be too specific in its designation criteria. The program will likely receive significant political pushback, especially in the context of the housing crisis. In this context, the messaging around the program's intentions to complement the PDA program and to stabilize, not necessarily grow, the PDR sector will be crucial to its success.

Table 2: How the PPA program could address challenges identified by city staff

Challenges for Industrial Land	→ PPA Program Goals	How do the goals relate to reasons for wanting a PPA program?				
		→ Funding	Employment focus	Best practices toolbox	Elevate IL profile	Regional framework
1. Market pressures	Provide a sign to the market that particular sites are going to stay as PDR spaces.				X	X
2. Limited space	Leverage the lack of space as a reason to retain industrial land.				X	X
3. Mixed-use districts	Determine if and where mixed-use industrial is appropriate.	X		X		
4. Outdated zoning codes and policies	Enable updates to zoning codes to allow for more modern and/or flexible uses.	X		X		
5. Outdated infrastructure	Provide infrastructure modernization support.	X		X		
6. Environmental issues	Address environmental justice concerns to minimize disproportionate distribution of the burden from noxious uses.			X		X
7. Talent attraction	Create a linkage between the PPA program and economic development policies, particularly workforce development programs.		X			X
8. Internal city government resources and structure	Provide additional resources needed to conduct needs assessments and regulatory updates.	X				
9. Political barriers and lack of a constituency	Minimize the political burden for local politicians.				X	X

Next Steps

This report provides a foundation for the ongoing development of ABAG-MTC's PPA program through feedback from a range of local jurisdictions. Going forward, ABAG-MTC should consider the following next steps to build upon this foundation and carry out the development of the PPA program:

- Continue outreach and engagement with stakeholders.
 - Host a set of webinars to solicit feedback from local jurisdictions throughout the development of the program.
 - Reach out to additional local jurisdictions who were not included in this study. Consideration should be given to those cities that are not included in the BAUM Initiative to provide alternative perspectives.
 - Conduct additional interviews to understand alternative perspectives and the stakeholder landscape. Interviewees could include business and/or land owners, developers, and brokers.
- Prioritize ideas that were suggested during this initial outreach process and determine which elements can feasibly be addressed via the PPA program.
- Develop a set of criteria that ABAG-MTC would use to determine eligibility for a PPA designation.
- Identify optimal areas to designate as PPAs through a quantitative, spatial analysis.
- Design PPA program policies in a manner similar to that of the PDA program.
- Develop a set of alternatives for what the PPA program could look like.

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Appendix I. Interview Guide

Welcome

Thank you for taking the time to meet. I'm a second-year graduate student in City Planning, working with ABAG-MTC and Professor Karen Chapple on developing a Priority Production Area (PPA) program for the Bay Area region. As you may know, ABAG-MTC is developing a PPA program to support production, distribution and repair activities and their suppliers in dedicated zones within jurisdictions, similar to the Priority Development Areas (PDA) already defined in Plan Bay Area 2040. The development of a PPA program is an action item within Plan Bay Area 2040.

I'm interested in understanding how localities view industrial land use preservation, their perspective on conversion criteria, and their views on addressing industrial land supply within a regional planning framework. I'm also interested in learning more about the transportation issues at industrial sites in [insert city]. I'm specifically interested in the challenges that may exist in providing access to jobs at these sites that are not always conveniently located via transit, while also maintaining effective transportation for goods movement, and how your city may (or may not) address these issues.

This interview will be used for my personal capstone project, as well as to assist ABAG-MTC with the development of a PPA program. Before we start, would you mind if I record this interview for note-taking purposes?

Introductions

1. What is your role in industrial land use planning for [insert city]?
2. How did you get into this job?

Industrial Land Overview Questions

[Review zoning code before interview to inform Q3, and perhaps skip it]

1. What are the major functions of industrial land in your city? What types of uses are allowed? Who are the major users of industrial land?
2. Does [insert city] have any programs to help key employers and their suppliers find industrial space? If not, are you currently developing such a program?
3. Does [insert city] assess their need for industrial land in the next 10, 20 years? If yes, how does [insert city] do this?
4. [If applicable] What are your city's needs and expectations for industrial land in the next 10 years? 20 years?

PPA-specific Questions

1. Would a PPA program of some type be useful for your city? What are your key reasons for wanting (or not wanting) to have a PPA?

2. What characteristics/purposes of a PPA would be helpful/appropriate for your city?
3. Protection of industrial uses and suppliers from encroachment by residential?
4. Protection of product assembly and other manufacturing uses from encroachment by logistics?
5. Special funding or services for industrial uses or workers in industrial space?
6. Clear signal to developers where residential is desired vs. industrial?
7. Other?
8. What criteria would be most important in designating between a Priority Production Area and other types of industrial, commercial or mixed-use space? Are you already thinking about these criteria? If so, what are they?
9. If industrial land were to be converted in [your city], what would you think about this?
10. For your city, what would be useful distinctions between PPA and PDA designated areas? For example, if a PDA already includes industrial land, would industrial land retained through a PPA be separated from the PDA, or might some overlap exist?

Transportation Questions

1. Are you seeing a change in distribution patterns in your city? Are you seeing pressure from logistics (distribution activities) on existing industrial land or on existing logistics use of industrial land from other activities?
2. What level of importance should transportation access for goods movement have in determining if a site is eligible for a PPA?
3. What level of importance should transit access for employees have in determining if a site is eligible for a PPA?
4. Has your city experienced conflicting priorities in planning for goods movement versus planning for access for workers at these sites? If yes, what steps have you taken to address these challenges?

Wrap-up

Do you have any additional comments?

Additional Questions (if time permits)

What are the market pressures? From whom?

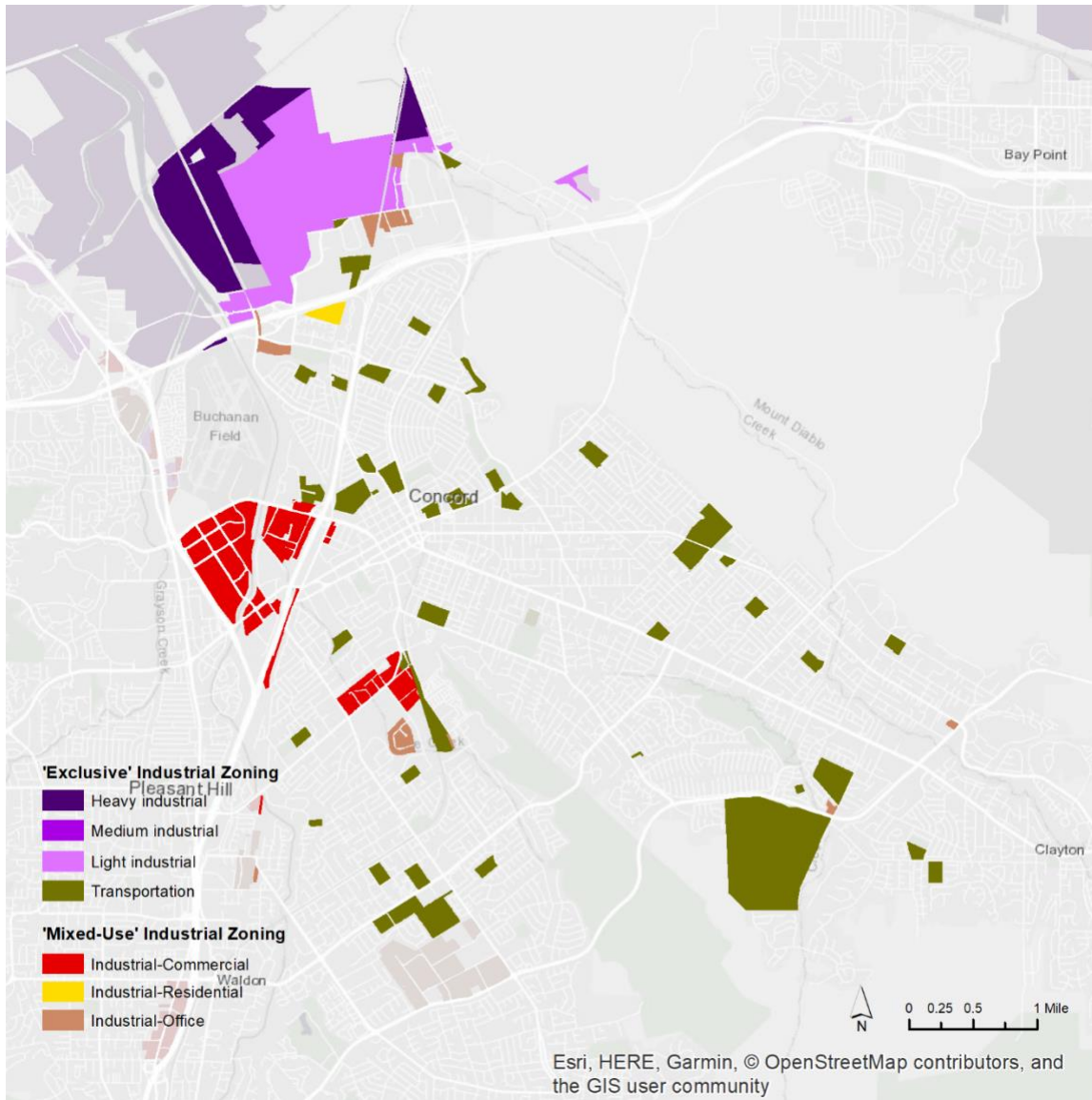
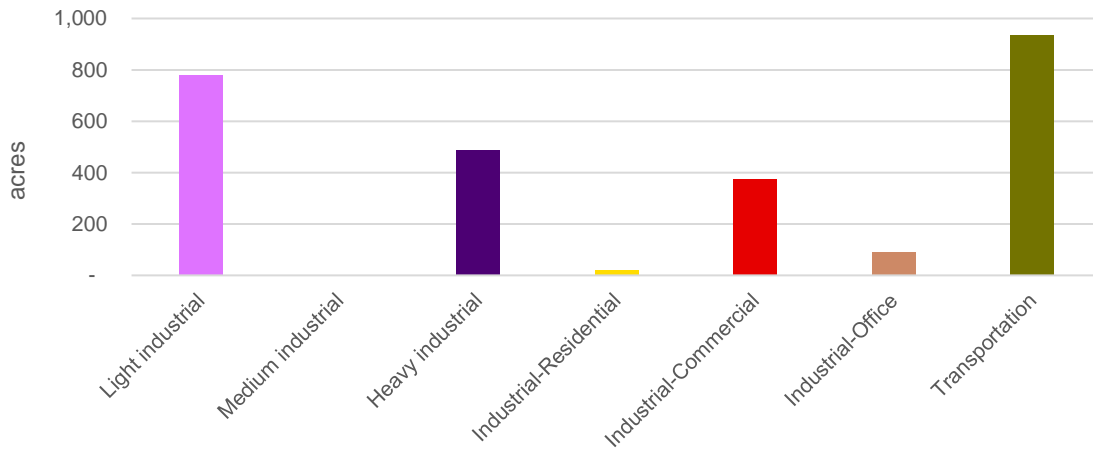
Who would want PPAs and who wouldn't?

Are you aware of examples of how a PPA (or your current system) would help or hinder specific companies already working in the area?

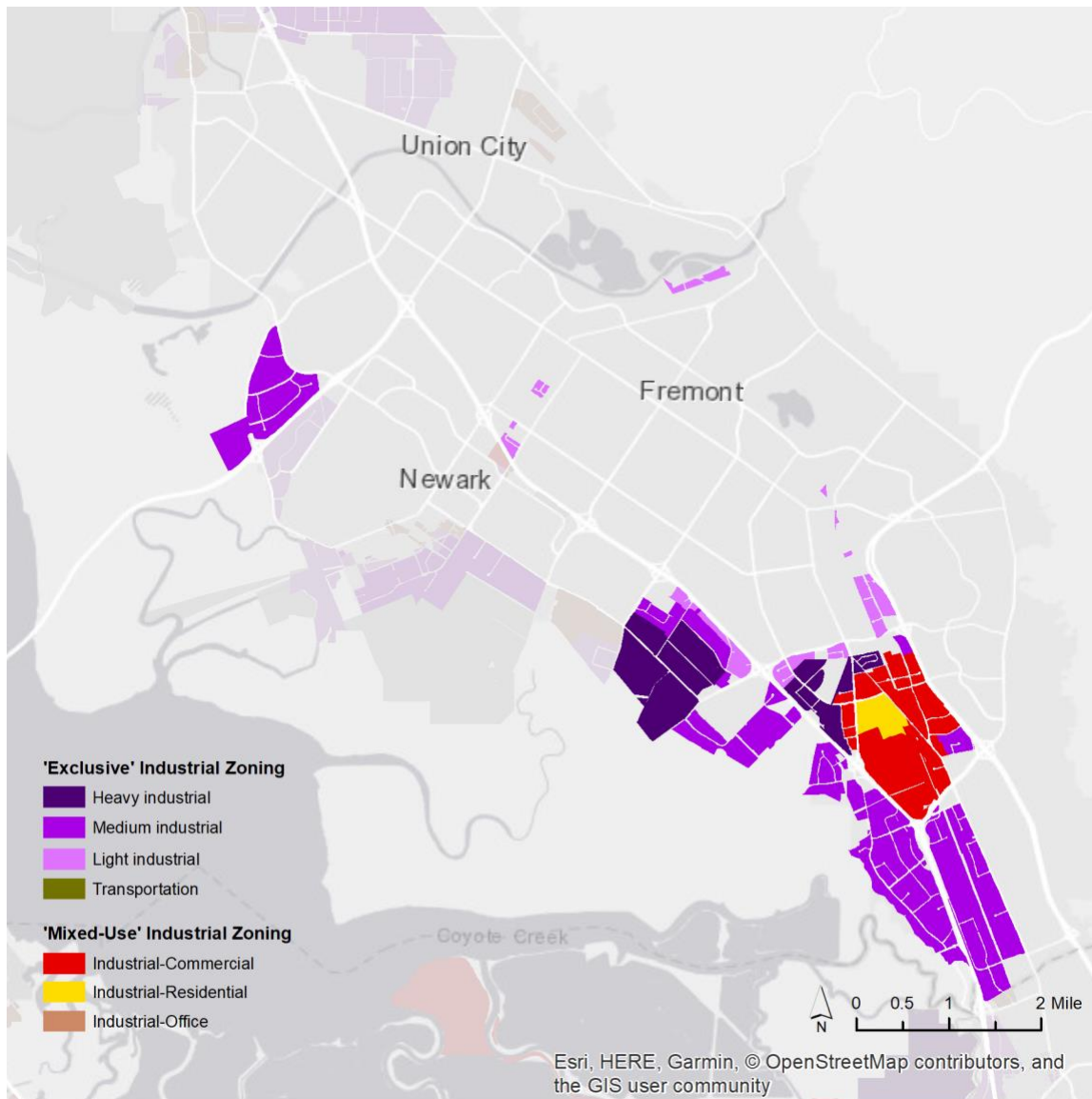
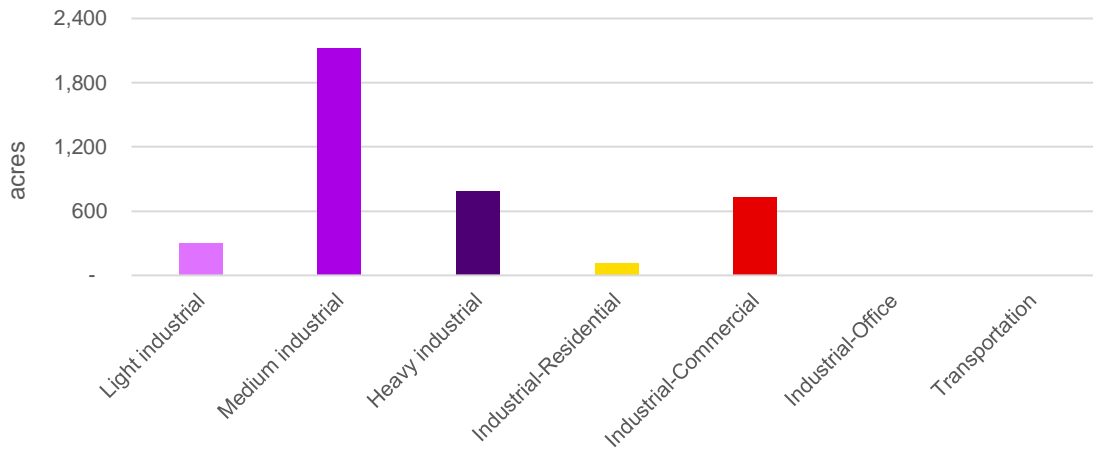
Appendix II. City Profiles

The following profiles describe the industrial land composition of each local jurisdiction that was interviewed for this study. A map is displayed at the scale of the local jurisdiction's boundaries, as well as a chart that shows the magnitude of the amount of industrial land by type in each jurisdiction. All data used to create these charts and maps are from Chapple's *Industrial Land and Jobs Study*.

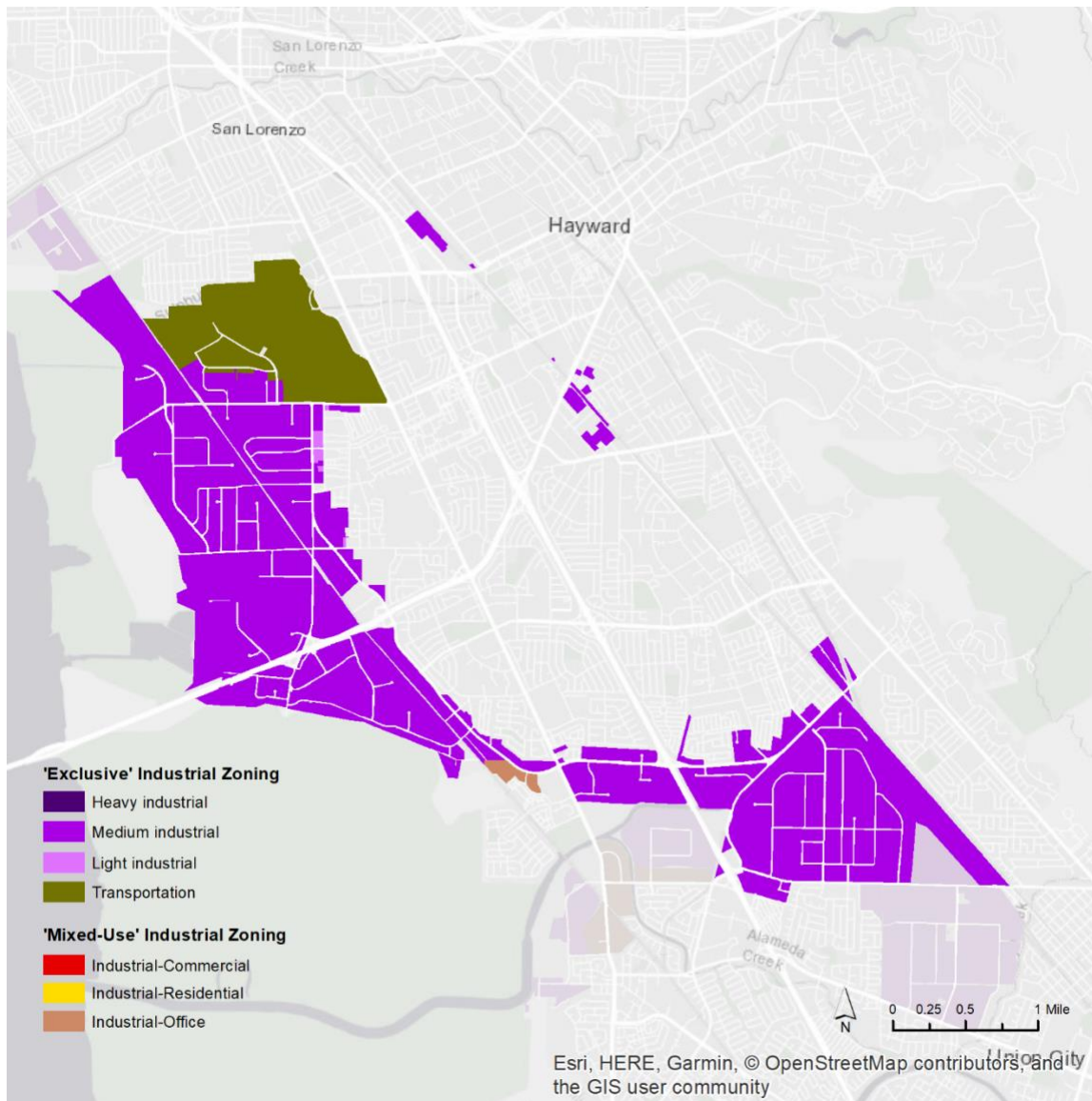
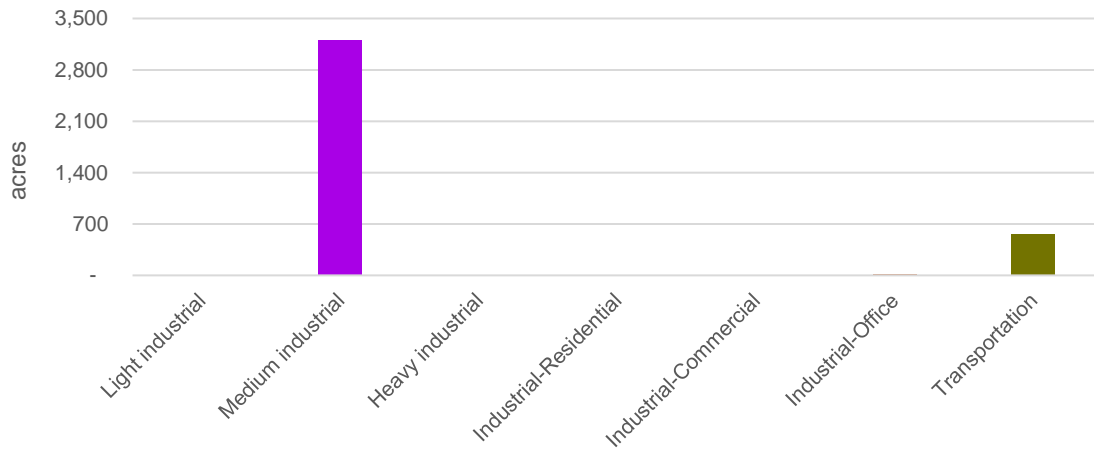
Concord



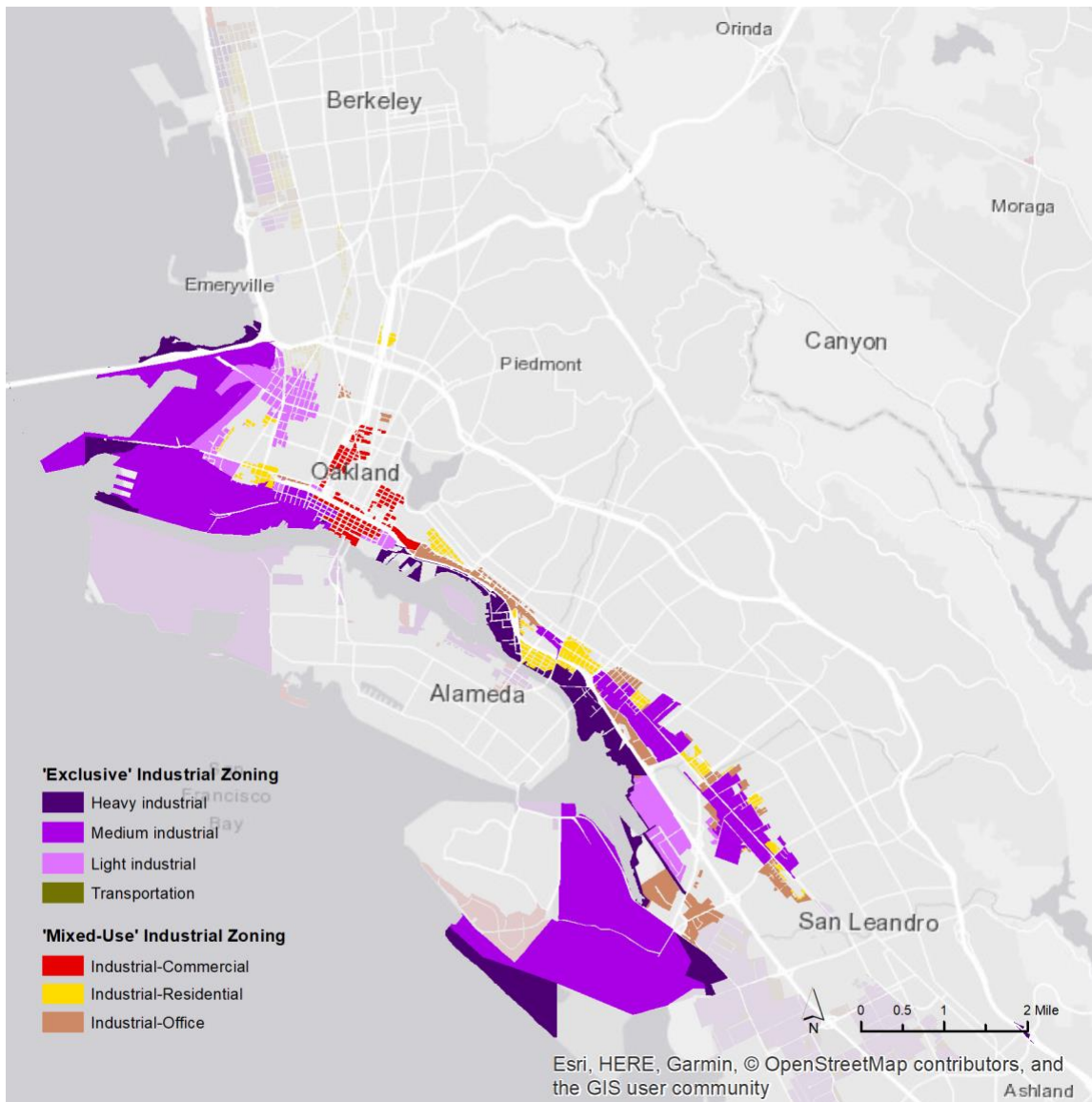
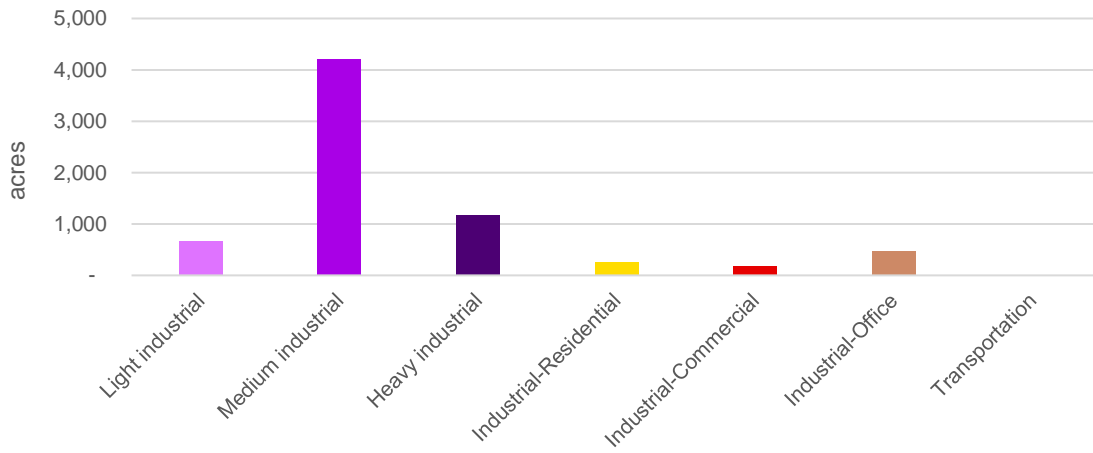
Fremont



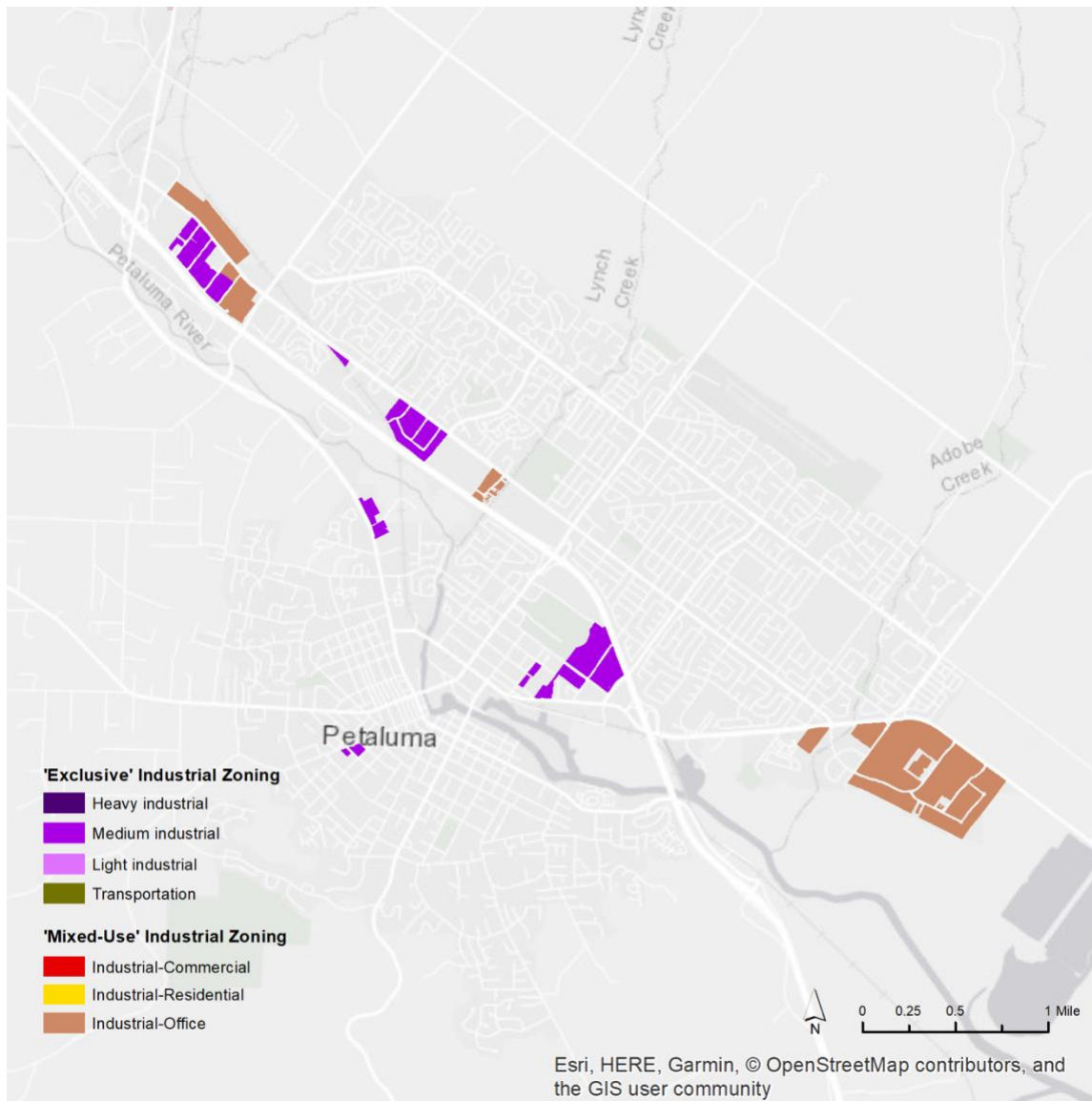
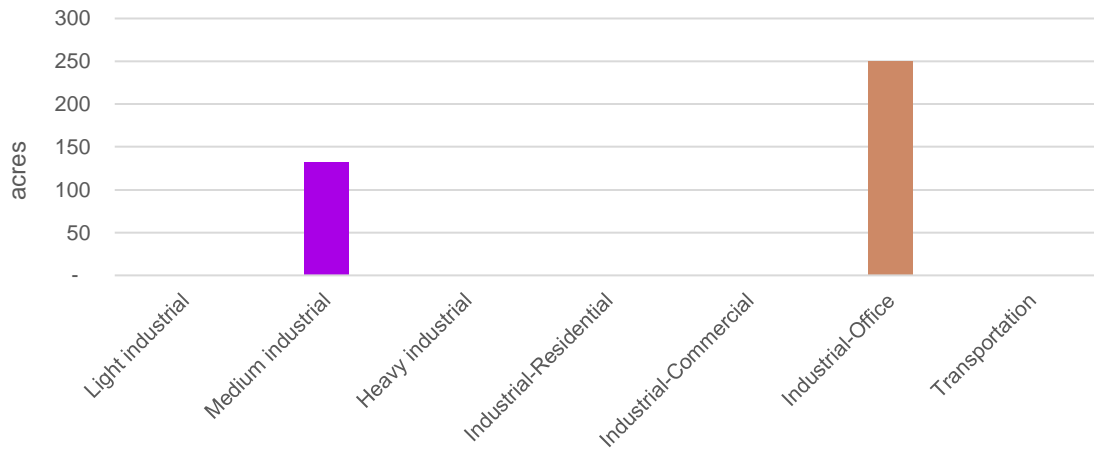
Hayward



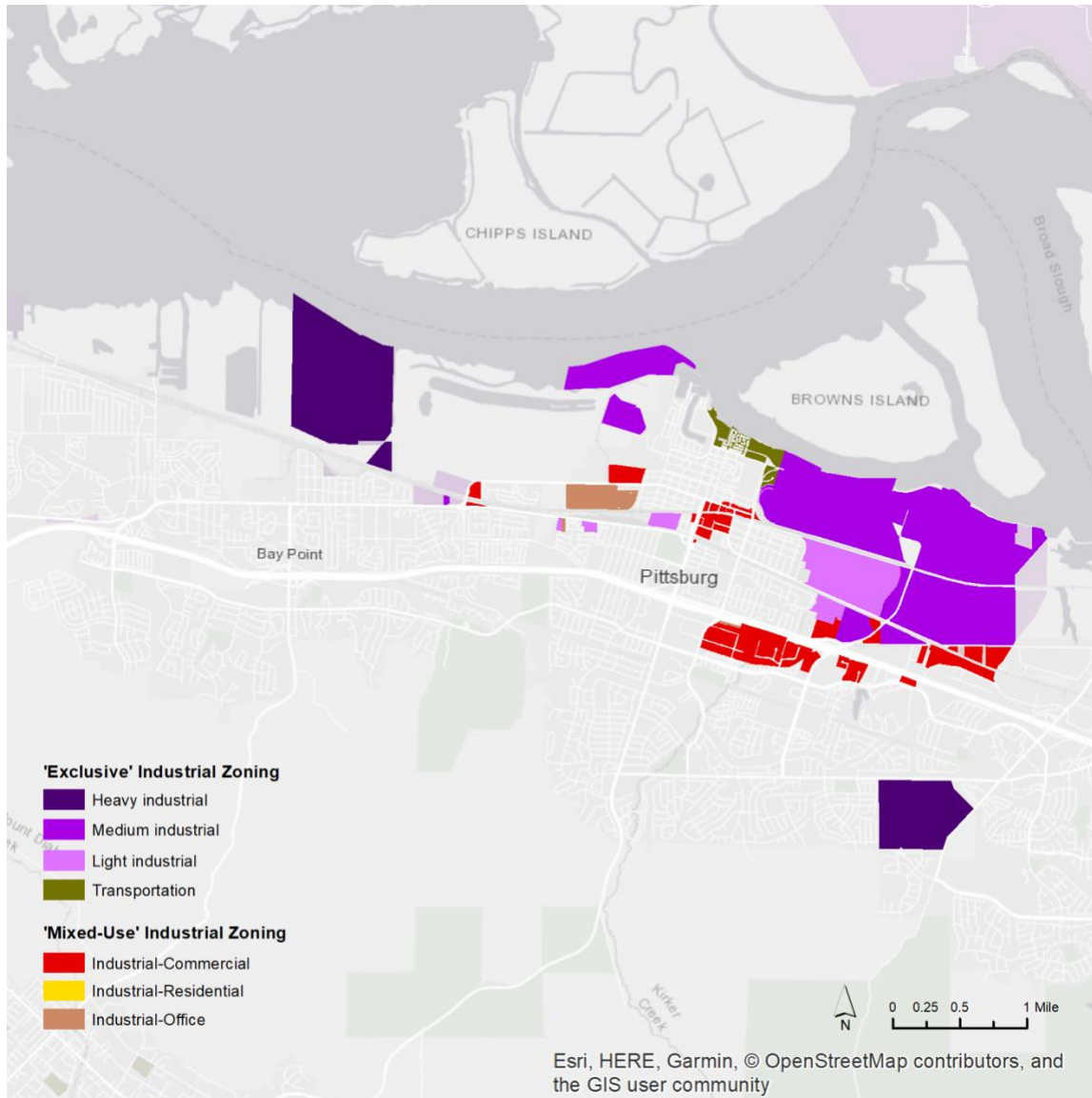
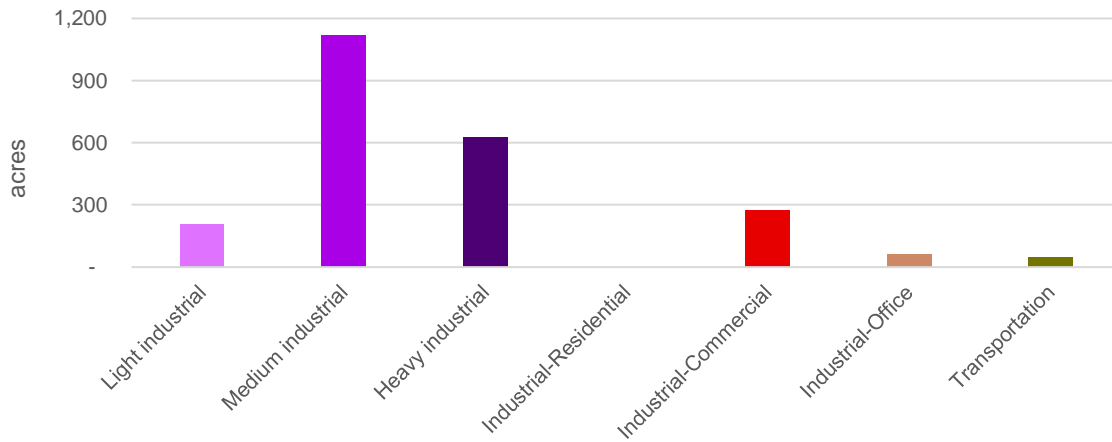
Oakland



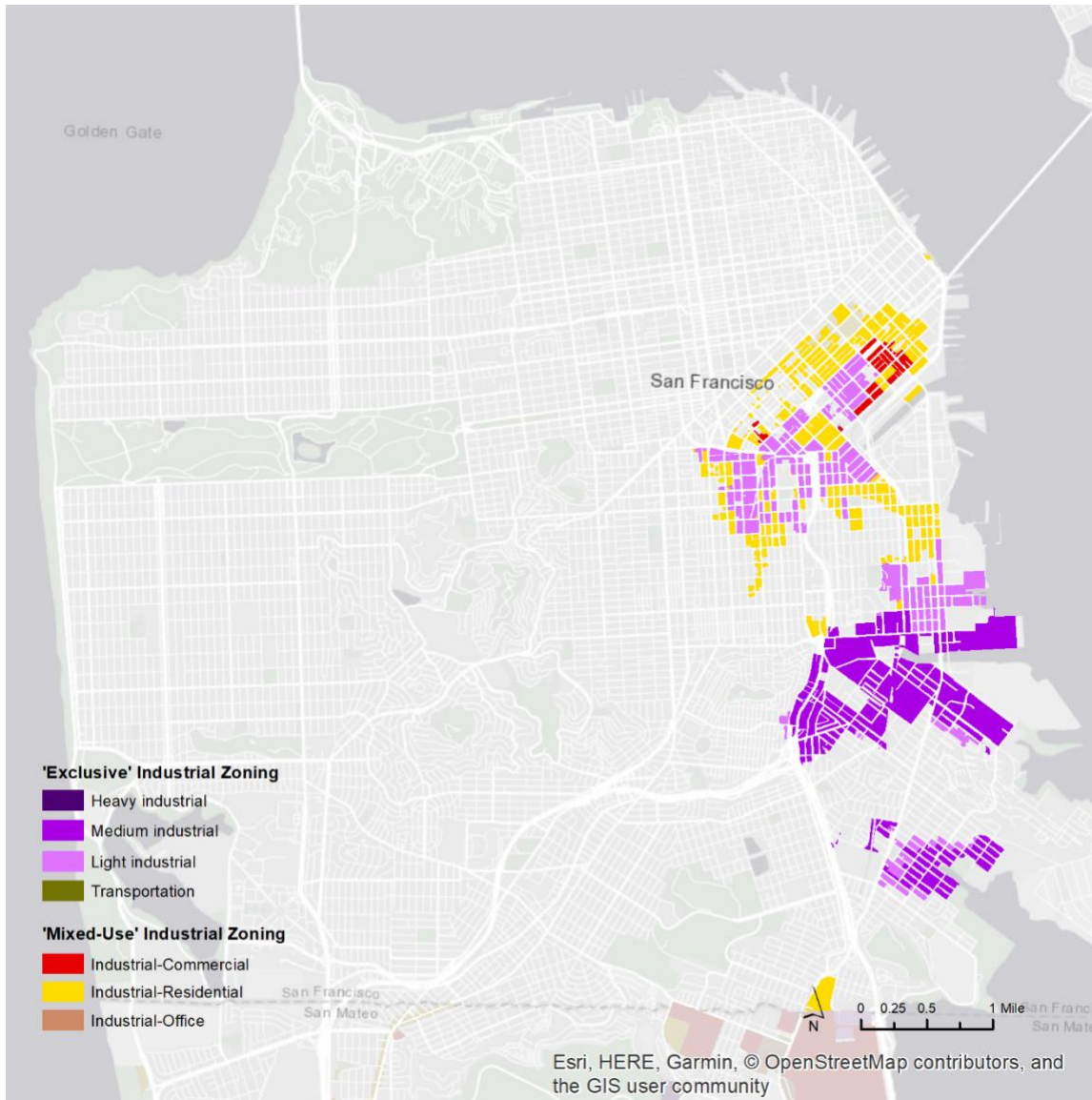
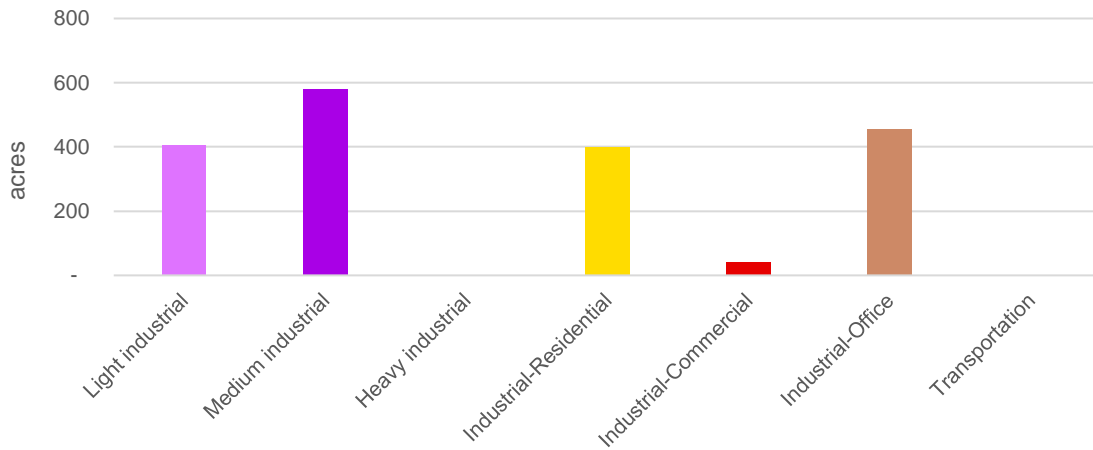
Petaluma



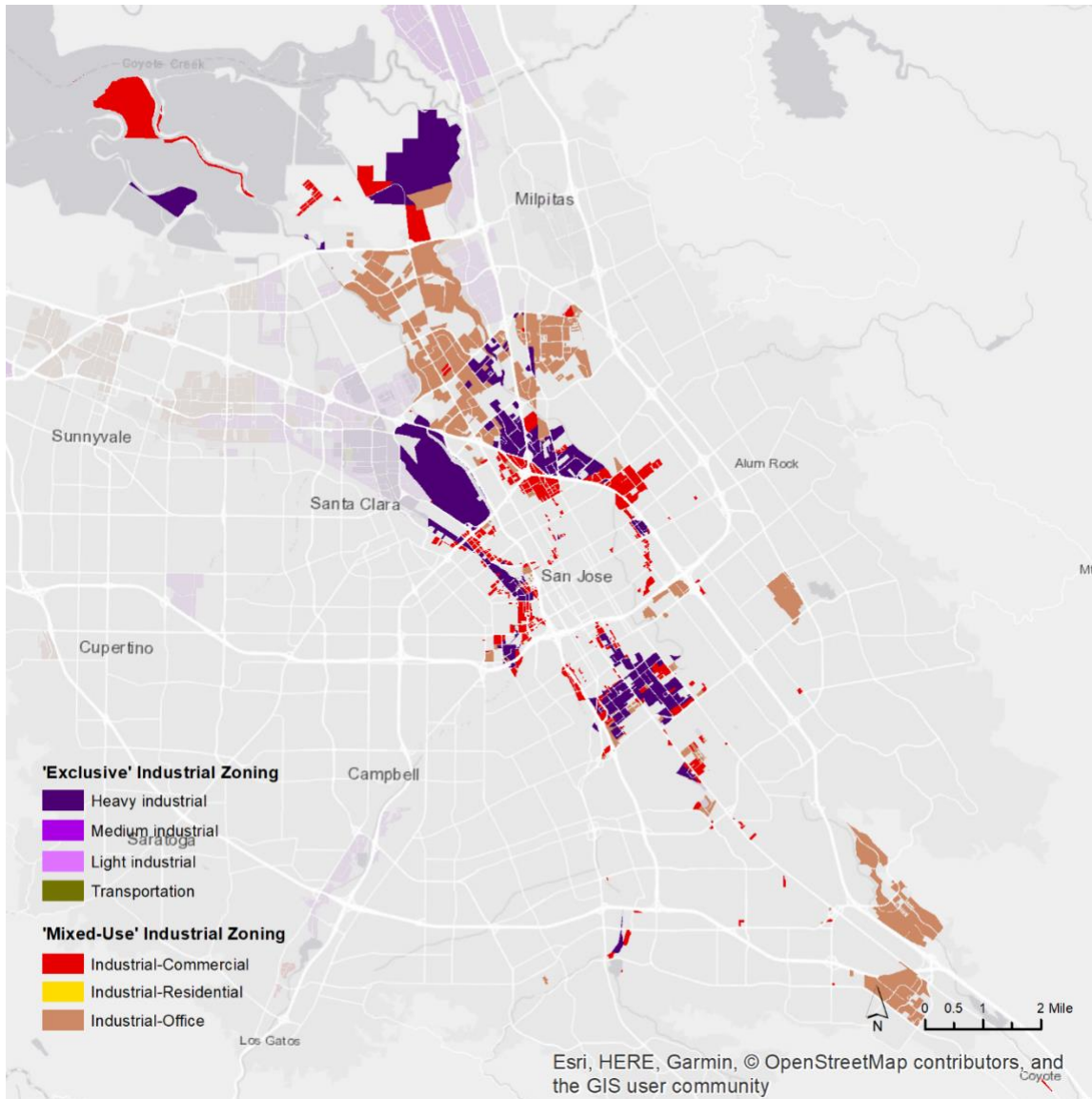
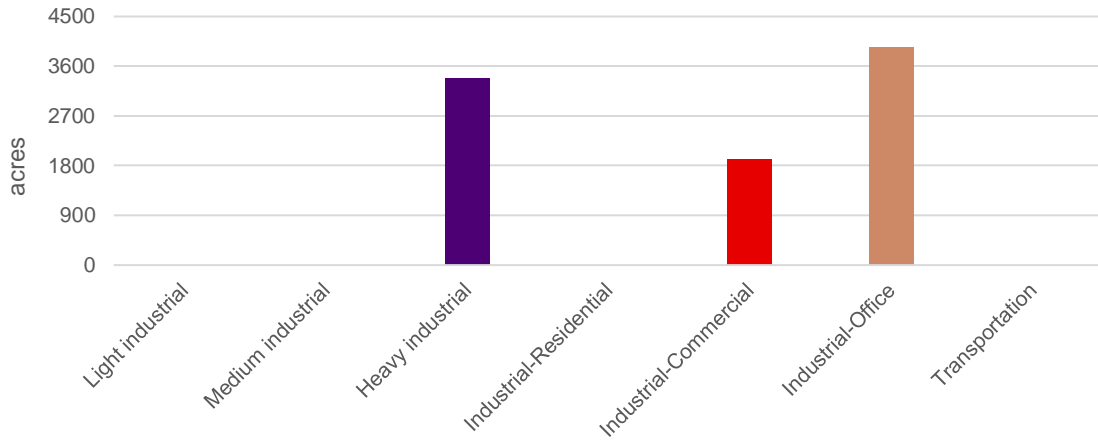
Pittsburg



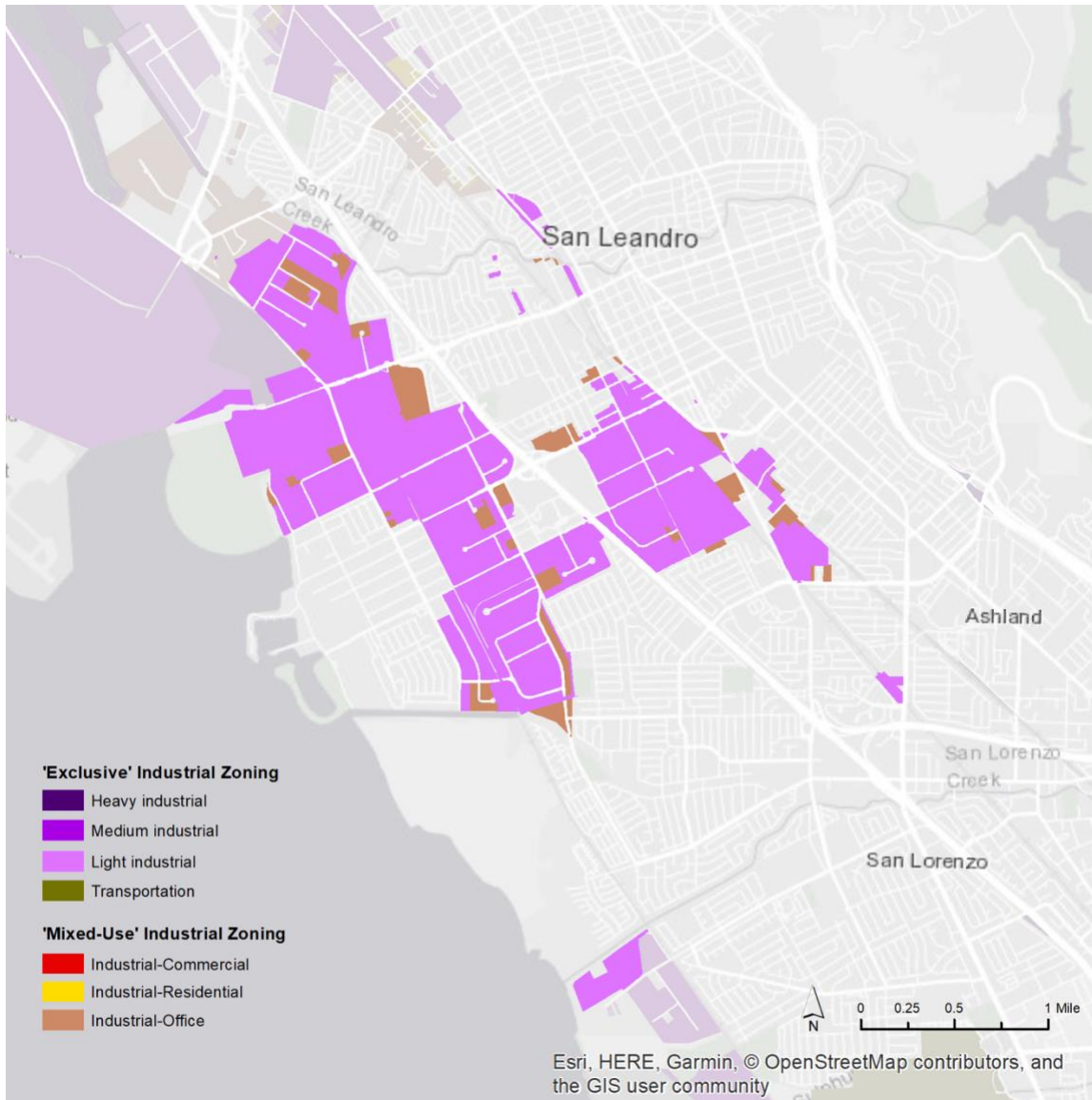
San Francisco



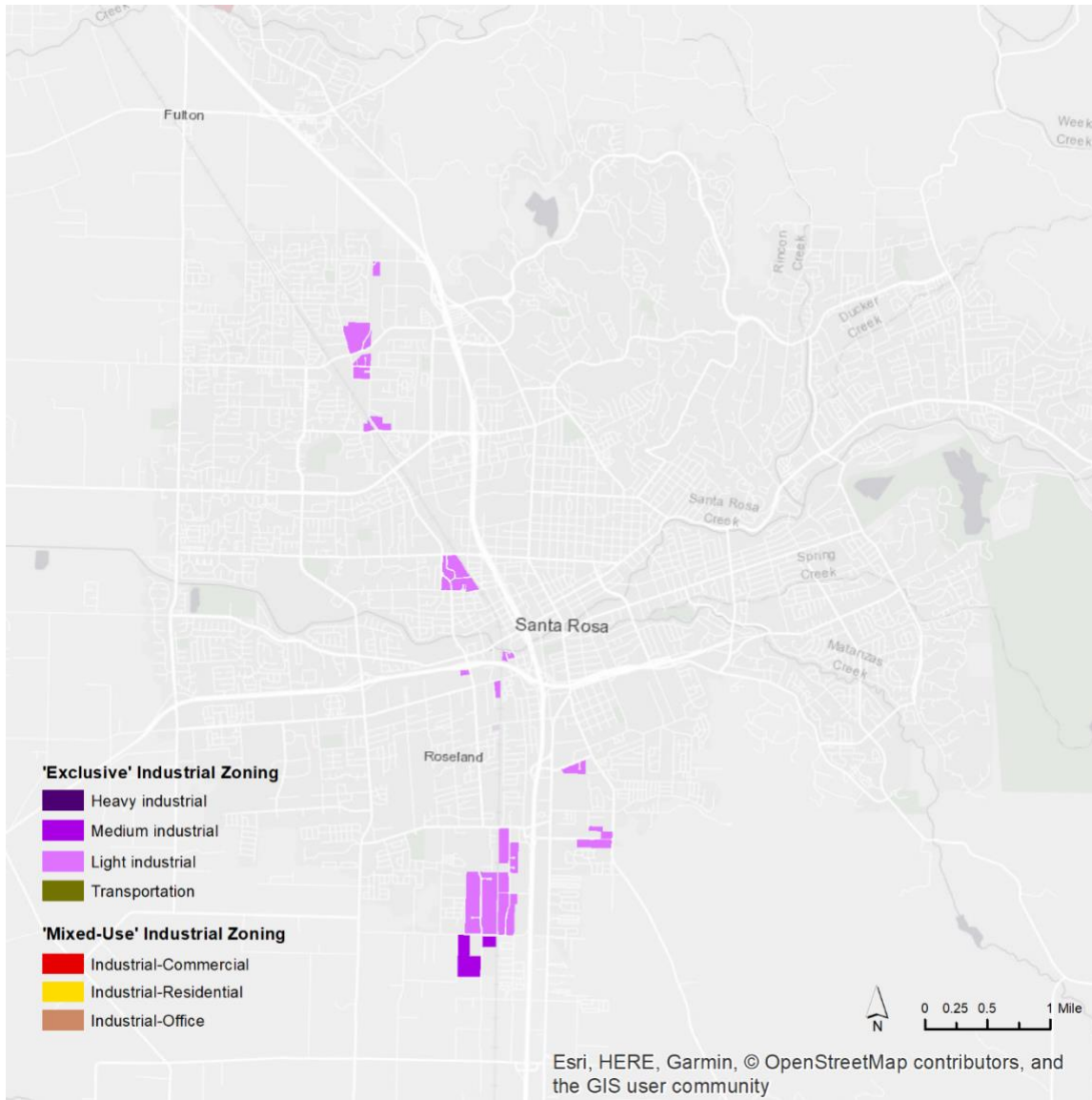
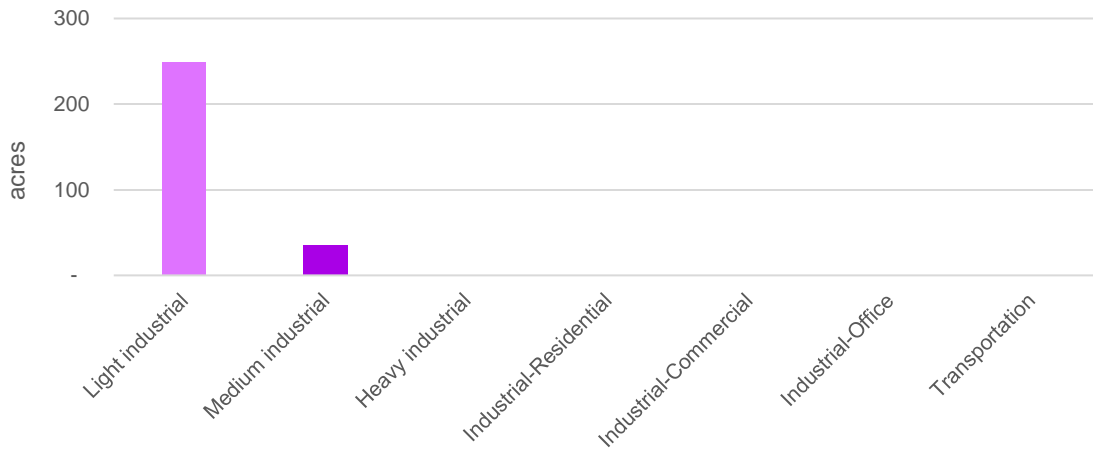
San Jose



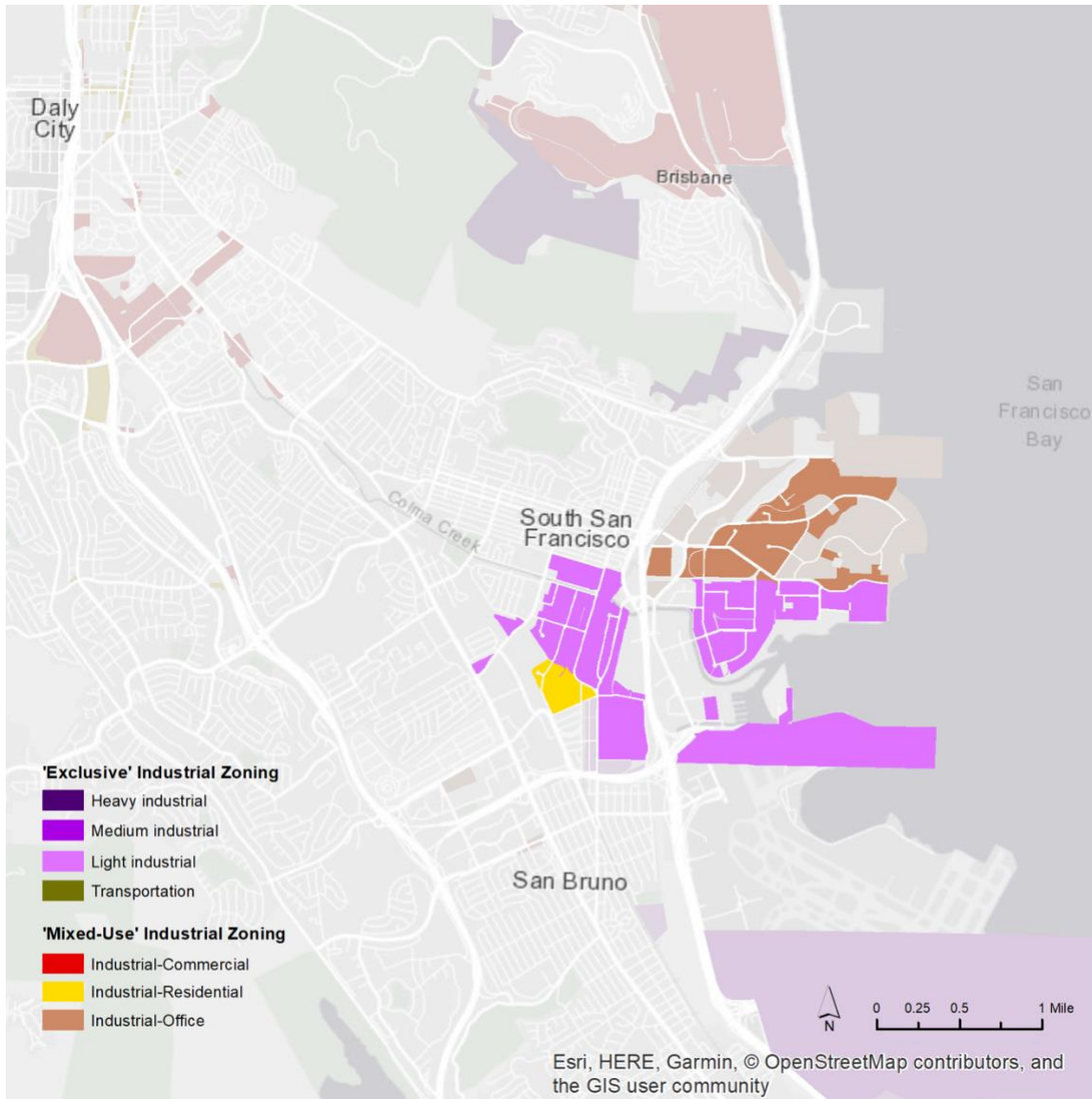
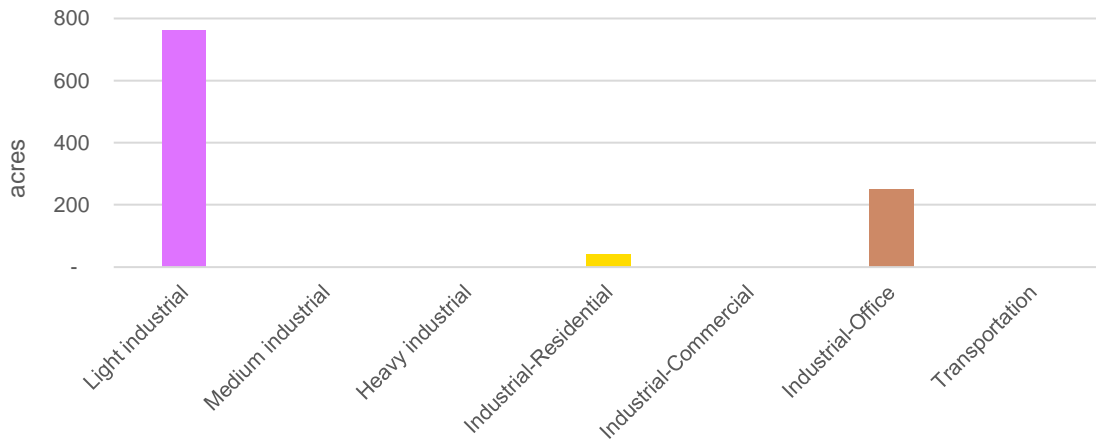
San Leandro



Santa Rosa



South San Francisco



Appendix III. Shuttle Services

The following case studies discuss different institutional arrangements used to provide shuttle services to and from industrial employment centers. All examples were mentioned during interviews with city staff.

Public-Private Partnership (PPP) Services

PPPs can take on a range of institutional arrangements between public and private actors. Interviews highlighted a variety of partnerships between local jurisdictions and private sector actors, such as cities partnering with on-demand or flexible shuttle companies, cities partnering with a local Business Improvement District (BID), and cities facilitating the planning for shuttle services that will ultimately be provided by private firms.

Public Sector Partners with On-Demand and Flexible Services, Hayward (deferred proposal)

The City of Hayward sought to provide a non-traditional shuttle service to connect major activity centers to BART, which included the city's two primary industrial districts. City staff mentioned that businesses in these districts suggested that a more direct shuttle service could help existing businesses with employee recruitment and retention and attract new businesses. A study that examined potential shuttle services recommended a fully-contracted shuttle service model where the City would hire a private contractor to operate and maintain the shuttle (Fehr & Peers, 2017). The study also proposed that "flexible, non-traditional shuttle operators may be able to provide the service at a lower cost." Such services could include on-demand ridesourcing services (e.g. Transportation Network Companies like Uber and Lyft) and flexible shuttle services (e.g. microtransit companies like Chariot). Similar to the fully-contracted model, the non-traditional approach would require the City to develop and oversee an agreement with the provider(s). Funding sources for either model would include grant funding, and contributions from developers and the Hall of Justice.

Ultimately, the plan was shelved by the City Council in Fall 2017 because of two main reasons: 1) a funding gap, and 2) pushback from AC Transit that claimed the shuttle service would overlap with their existing and planned local bus routes (Moriki, 2017). In addition, the proposed route to the industrial area would bring workers to the edge of the industrial district, but not into the area; therefore, a last-mile may still exist within the industrial area itself. This proposal demonstrates the resource constraints for even a lower cost service, pushback that non-traditional modes may face from traditional transit services, and the difficulty in identifying a route that connects workers directly to their job in a dispersed industrial area.

Public Sector Partners with Business Improvement District, San Leandro Links Shuttle (existing)

The Links shuttle in San Leandro operates two routes between the San Leandro BART station and the industrial district west of I-880. Links is funded by the San Leandro Business Improvement District (BID), the City of San Leandro, and grants; it is operated by a non-profit organization with representation from local businesses and the City of San Leandro, the San

Leandro Transportation Management Organization (SLTMO). The BID provides about 50 percent of the funding. Therefore, buy-in from property owners is essential to Links operations; city staff noted that one area of the city is currently not included due to lack of buy-in. While this service is better than no service, it does not provide service outside of traditional peak hour commutes and only operates every 20 minutes. Unfortunately, the limited service hours and frequency may not provide effective service for many commuters travelling to industrial jobs.

Public Sector Coordinates Private Sector Operation, Fremont Shuttle (planned)

The City of Fremont has recently undertaken the planning for a shuttle that will be operated by the private sector yet relies on public sector coordination. Local public transit services provide minimal service to this area of Alameda County and have attempted to fill the gaps, but they have found that it is too expensive and are supportive of an alternative transit connection. As an alternative, the city is coordinating the development of a transportation management agency (TMA) that would provide for a shuttle between BART and the industrial district. Economic development staff mentioned that they are trying to leverage some of their future industrial development to improve transportation connections. The city just approved a 2.7 million square foot project west of I-880 for which the development agreement requires that developers make a major contribution to start the TMA.

Going forward, existing companies will have to play a role and contribute to the shuttle's operations. While this would be a voluntary model, city staff suggests that tenants are finding that the overhead for individual models is expensive on their own; thus, the city is hopeful that firms will buy into the shared model concept. Overall, this type of shuttle program necessitates initial support from new development, ongoing contributions from tenants, and a lack of pushback from existing transit providers.

Public Sector Services

Staff at most cities emphasized that their local jurisdictions are not able to provide last-mile connections on their own due to resource constraints. However, economic development staff at the City of San Francisco stated that the city is undertaking improvements to existing public transport services to industrial areas. San Francisco is likely an anomaly within the Bay Area given its size, and associated larger budget and capacity to plan for, implement, and operate public services.

Public Sector Improvements to Existing Transit Services, San Francisco (existing)

San Francisco staff indicated that the city is attempting to improve access to industrial areas through improvements to public infrastructure and services. Staff stated that the improvements underway are those that already have the infrastructure, such as improving the Muni T line to the southeastern industrial areas, adding more bike lanes, and conducting outreach to inform workers that there are late buses that run in those areas. Additional planned improvements include increasing Muni service, and adding a water taxi between the financial district and the south side, where the majority of industrial businesses are located.

Private Sector Services

Staff across local jurisdictions mentioned that private shuttles are common for large businesses. The Bay Area has experienced a rise in private ‘tech buses’ over recent years, which carry riders for the majority of their commute rather than for just the last-mile. However, this paper focus on the private shuttles that transport workers the last-mile from transit stations to their job sites.

Private Shuttle, South San Francisco (existing)

Staff at the City of South San Francisco noted that some firms operate private shuttles for their employees, with no city involvement. Specifically, Genetech provides shuttles from the Glen Park BART station (in addition to commuter bus and ferry services from a range of cities and suburbs throughout the Bay Area). This model underscores the need for there to be a big user to support private operations. In addition, reliance on private sector funds may result in inequitable and/or unreliable services, especially given that many private sector actors do not recognize the role that they could play in providing such services, or often are not willing to pay. As one city official described, “most people think public transit is a public service they don’t have to pay for.”

Appendix IV. Suggested Criteria for Designating PPAs

Two studies provide useful frameworks that could guide the development of criteria for the PPA program: 1) Chapple’s Industrial Land and Jobs Study, and 2) a report produced by UC Berkeley Transportation Studio in Fall 2017 on goods movement and its associated industrial spaces in the Northern California megaregion (da Silva et al, 2017). Chapple's framework is included in the report body (p. 25). The criteria developed by Da Silva et al. is included below. The studio created an equity evaluation tool that planners could use to identify and compare potential sites for warehousing and distribution uses. The tool weaves measures of equity throughout the evaluation process, hence its title “An Equity Evaluation Tool.” While the scope of this report was focused on goods movement and its associated land uses, much of the criteria could likely be adapted to apply to the evaluation of broader industrial sites.

Goal	Criteria	Indicator	Score
Leverage warehouses for equitable economic development	Identify opportunity areas for job creation	<ul style="list-style-type: none"> Job density within a one mile radius is in the bottom 25th percentile for the county Unemployment rate within a one mile radius of the site is above county average Percent of residents with less than a high school education within a one mile radius of site is above county average 	_____
	Capitalize on local competitive advantages	<ul style="list-style-type: none"> Municipality has designated sites for use by locally competitive industry 	_____
	Enable local asset building	<ul style="list-style-type: none"> Municipality has policy encouraging clean technology upgrades for small- and medium-scale businesses OR Municipality has a workforce training program centered on emerging technologies in the goods movement sector 	_____
Promote health and safety for workers and residents	For Disadvantaged Communities: avoid high volume WDCs	<ul style="list-style-type: none"> Site is within a CalEnviroScreen Disadvantaged Community AND Zoning designation is for small or medium scale WDC 	_____
	Offset truck-related externalities	<ul style="list-style-type: none"> Municipality assesses an impact fee for uses that generate substantial truck trips 	_____
	Prioritize worker health and safety	<ul style="list-style-type: none"> City has policy that screens for labor violations during public bidding process, including subcontractors 	_____
Encourage sustainable transportation choices	For high volume WDC designation: site is rail adjacent	<ul style="list-style-type: none"> Site is within 5 miles of an intermodal terminal OR Site is within 5 miles of rail right of way 	_____
	For last mile WDC: site is highway adjacent	<ul style="list-style-type: none"> Site is within 1 mile of an off-ramp 	_____
	Facilitate sustainable commutes	<ul style="list-style-type: none"> Accessibility analysis shows site is accessible to a substantial number of low educational attainment workers 	_____