Chapter 2. Review of Industrial Trends and Peer Cities

CHAPTER INTRODUCTION

This chapter presents background and economic trends related to production that have real consequences for the central Puget Sound region's industrial sector, as well as specific trends and issues shaping the use and management of industrial lands at the local level.

The first section of the chapter reviews regional economic clusters concentrated on industrial lands. This overview provides context to understand the industries that are leading changes in industrial land utilization. The subsequent sections examine trends and issues that shape industrial land use in the region, including global trends changing industrial activity worldwide. Statewide and local trends follow. These sections provide brief overviews of the many forces that affect supply and demand of the region's industrial lands.

The latter section of the chapter reviews six cities in the U.S., plus Vancouver, British Columbia, and how they have evaluated and managed long-term supply and demand of their industrial lands.

INDUSTRIAL LANDS AND REGIONAL CLUSTERS

Industrial lands play a vital role in six of the 10 clusters that drive the region's job creation and revenue. These are:

- Aerospace
- Maritime
- Transportation and Logistics
- Life Sciences and Global Health
- Clean Tech
- Industrial Business Services

Aerospace

The central Puget Sound region is home to a unique cluster of aerospace companies that design and assemble aircraft. These companies and supporting industries reinforce the manufacturing sector in Washington state.

The majority of aerospace and supporting activities occur on industrial lands. Aerospace manufacturers, especially those in assembly, require

large parcels of land and a large floor-plate to operate. The Boeing Company's factory in Everett is the largest building in the world by volume and holds several production lines. Access to transportation networks is a major consideration for aerospace manufacturers. In the Boeing Company's case, the company is able to utilize the Port of Everett's deepwater shipping facilities which have a custom aerospace dock and Everett's Paine Field for airspace access and road infrastructure to transport employees and components. For these reasons, industrial lands are ideally suited to the needs of this sector.

Maritime

The central Puget Sound region has a large and diverse maritime sector located on industrial lands. Typical maritime uses include commercial fishing, seafood processing, passenger transportation, ship and boat building, container terminals, marine support industries and deep and shallow draft water transportation. Seafood processing, for example, is a large industry in this cluster. The central Puget Sound region is home to seven of the top-20 seafood suppliers in the U.S., including Trident Seafood, Tri-Marine and Nippon Suisan. The Maritime cluster relies on a robust and concentrated support system to fuel its growth. This includes everything from fueling operations to research, naval architects, marinas, accountants, maritime lawyers, cold storage, boat dealers, and public ports.

Transportation and Logistics

The Transportation and Logistics cluster encompasses ports, air, rail, and truck transportation, container terminals and warehousing and storage. The cluster is key to various shipping, warehousing, and airline businesses as well as the tourism, maritime, manufacturing, military, and technology sectors. The region's ports play the role of an international gateway and trade resource in this sector, providing fast and convenient links to global markets.

Medical Devices, Life Sciences and Global Health

Typical Medical Device, Life Science and Global Health companies utilizing industrial land in the region manufacture different types of products such as ultrasound machines, defibrillators, and drugs for treatment in Crohn's disease and arthritis. The largest regional employers in this industry are Philips Healthcare, Physio-Control, Cascade Engineering Services, and NanoString Technologies.

Clean Tech

The region's geography and culture of environmental protection supports a growing Clean Tech cluster. Activities associated with this sector include salvage yards, recycling centers, architectural manufacturing and

engineering. Facilities for energy production and distribution also utilize industrial lands.

Industrial Business Services

A variety of supporting business services, such as repair services, operate on industrial-zoned lands. Additionally, manufacturing businesses are evolving to incorporate larger service and repair components into their traditional production activities.

GLOBAL TRENDS SHAPING INDUSTRIAL LAND USE IN THE CENTRAL PUGET SOUND REGION

Historic Global Manufacturing Trends

Global economic forces related to production have profound implications for industrial land use at a local level. In the 1980s, major policy shifts like trade liberalization massively increased global shifts in the production of goods underway since World War II. New overseas supply chains and markets were forged, economies of scale were realized, and profits soared on the low cost of foreign labor. Entire industries changed. In the case of textile production, for example, the North American Free Trade Agreement (NAFTA) erased import duties on much of the apparel produced in Mexico, leading to a massive shift in textile production away from the U.S. In 1991, American-made apparel accounted for more than half of all the clothing bought domestically, and by 2012, it accounted for 2.5%.

Another profound impact on U.S. industrial activity happened with China's entry into the World Trade Organization (WTO) in the mid-1990s, which marked the country's entry into the international economy. This policy shift had the effect of dampening employment in the manufacturing sector by *one-third* in the U.S. These global events affected the demand for industrial land throughout the U.S., including the central Puget Sound region. Trade liberalization has benefited the region as well, especially in the case of regional manufacturers such as the Boeing Company and the region's ports.

In addition, outsourcing of manufacturing to Mexico, in addition to traditional outsourcing to Asia, continues regionally, according to real estate professionals interviewed for this study.

Recent Resurgence of Manufacturing Jobs

Manufacturing employment as a fraction of total employment declined for the past half century in the U.S. It declined from 28% in 1962 to only 9% in 2011. Economists identified large productivity gains as the driving force behind this contraction. Additional factors, such as the entry of China as a major player in trade in 1990, have exacerbated the downward

trend. In recent years, however, there are signs that a recovery may be on the way, including:

- Rising wage costs in China and lower energy costs in the U.S., narrowing some of the cost advantages of offshoring.
- Companies' desire to be close to customers to respond quickly to shifts in demand.
- A political climate supportive of manufacturing employment.

This process of on-shoring is still in its infancy but manufacturing industries, including computers and electronics, machinery, fabricated metals, electrical equipment, and plastics and rubber are leading the on-shoring trend. Other sectors reviving domestic manufacturing include production of furniture, petroleum, chemicals, primary metals and food and beverages.

In addition to recovery, the global manufacturing sector is expected to undergo a set of transformations, creating the "factory of the future":

- Large-scale manufacturing of complex products will continue, but a growing proportion of manufacturing will move to small-scale, possibly even within homes.
- Technology will reduce the number of certain types of jobs created by manufacturing.
- Manufacturing will require a higher-skilled workforce.
- Manufacturing will continue to evolve from production alone to include activities that fall under an umbrella of services.

On-shoring trends may not necessarily bring jobs to the Puget Sound region, however. In addition to global outsourcing, central Puget Sound competition for industrial users includes Colorado, South Carolina and other southeastern states. Local real estate professionals interviewed for this study also identified neighboring Idaho as increasingly competitive for industrial tenants.

Industrial areas play an important role as locations for incubators. Manufacturing-aware cities and regions (cities and regions with a long history of protective industrial policies) often support these incubation spaces by allowing production space as well as providing investment capital. Entrepreneurial and maker communities often produce small ideas that graduate to large companies (Theo Chocolates in the Fremont area is one example).

WASHINGTON'S MANUFACTURING SECTOR AND REGIONAL TRENDS

While macroeconomic forces changed the U.S. manufacturing sector, employment in the Puget Sound region's industries—apart from historic volatility in aerospace manufacturing prior to the tech boom—remained remarkably stable.

Since 2009, however, Washington's manufacturing exports grew more than **three times** as fast as the state's overall economy. In March 2012, manufacturing employed 277,900 in the state. Between March 2011 and 2012, Washington's manufacturing sector added 14,600 jobs, leading all other sectors in job gains. Most of that growth was in the central Puget Sound region by the Boeing Company and other aerospace firms, accounting for more than half of all job gains. The remaining new jobs came from producers of metal, machines, food products, electronics, and industrial equipment.

Today, some local companies that benefitted from re-shoring are aerospace firms (specifically, manufacturers who make large numbers of parts from raw metal or plastic) that were the most susceptible to offshoring a decade ago. However, as these jobs return, a different workforce is required to support manufacturing in the central Puget Sound region.

Technology Changes Washington's Manufacturing Sector

The central Puget Sound region's manufacturing industries are concentrated largely in advanced manufacturing. Manufacturing sectors are underpinned by technology, including aerospace, medical devices and biotechnology, energy production, and food manufacturing. Technology is both a driver of automation, keeping labor costs low (a key determinant in what types of manufacturing jobs are returning), as well as in the democratization of manufacturing, where individuals can customize and make their own products in small batches or a single unit using web-based software and assembly or 3-D printing.

New Processes

Newer technologies—especially accessible and accurate 3-D printers, design software, and assembly tools—benefit Washington's composite manufacturing sector by allowing design engineers to bypass the time-intensive design process to produce parts faster. Another relatively new industrial process is "just-in-time" processing, with parts arriving just in time for use rather than being stored for a long time. This has changed the need for storage space. Technology has also enabled dramatically lower-impact and cleaner modern industrial processes, effectively

reducing many traditional land use conflicts that can isolate industrial activity to industrial zones.

Automation and the New Industrial Workforce

Technology advancement has dramatically altered industrial sector workforce needs. Stakeholders and local real estate experts convened for this project noted that a strong trend in regional manufacturing is the growing use of technology. Automation may result in fewer employees required to run a factory, lab, warehouse or mill. For example, focus groups named Amazon's new fulfillment centers in Kent and DuPont as examples of trends in modern warehouse automation. The space in DuPont will have one section of the warehouse dark because automated robots can perform the packaging and shipping tasks without lights, around the clock.

In many cases, however, a higher level of technological skill is required to operate automated technologies. Automation can also benefit workers by reducing exposure to hazardous working conditions. This lowers potential Labor and Industry rates, lowering overhead costs. Automation thus affects the type of employment more than land utilization. Washington's manufacturers will benefit from job training programs and non-profits who work to align technical skill with industry need.

Artisanal and Craft Urban Industrial Land Uses

A major trend in manufacturing in urban areas across the U.S. and locally focuses on small-size "craft" production of small batches of specialized products. Wineries, distilleries, breweries, specialty furniture stores, and interior fixtures are examples in the Puget Sound region. This type of manufacturing takes place inside city limits where access to urban markets and industry peers is paramount. Since 2013, Seattle neighborhoods like Ballard, Fremont and Georgetown as well as the Woodinville Wine District and Heritage Distilling in Gig Harbor are examples of places which have benefited from a convergence of relatively affordable real estate, favorable industrial and commercial zoning and thriving residential growth.

Regional Trends for Industrial Lands

Evolution and management trends of the region's industrial lands include:

- Incursion on industrial land by other types of land uses.
- Conversion of industrial land to other types of land uses.
- Regional economic development efforts for industrial lands.

Incursion on Industrial Land by Other Types of Land Uses

The incursion of non-industrial land uses into industrial areas—especially uses that generate heavy traffic volumes or substantially increase land values—is a key issue facing the region's urban industrial areas. Land use frictions develop as heavy industries operate beside new uses. Land use competition, transition and pressure are more prevalent in relatively more urban concentrations of industrial lands, such as in the Duwamish and Ballard-Interbay areas. For example, Scott Galvanizing, one of Ballard's oldest manufacturers, moved to Snohomish County citing the pressures of operating in an increasingly gentrifying and residential neighborhood hampering production.

While Seattle has historically limited the amount and size of office and retail spaces allowed in its industrial zoned areas, protection is skirted in various ways. In particular, the Industrial Commercial (IC) zone accounts for 8% of all industrial zoning in the city and allows office uses in Interbay, north Lake Union, and north SODO areas. While the intent of the Industrial Commercial zone is to promote industrial and commercial development while accommodating a wide range of other employment activities, the zoning has resulted in a tremendous incursion of single-use office development.

Another aspect of incursion comes in the form of continuing pressure to remove land from industrial zoning designations or to loosen limits on non-industrial uses and allow a wider range of uses, especially residential, on industrial-zoned lands. Policies that may encourage incursion include allowing a wide range of non-industrial uses, including residential uses, on industrial-zoned lands.

Conversion of Industrial Land to Other Types of Land Uses

As the region grows and evolves, several cities are responding to demand for residential, office, and mixed-use development by rezoning previously industrial-zoned areas. Most rezoning is of post-industrial districts with weak demand and low potential for attracting new industrial users.

BEL-RED CORRIDOR
The Bel-Red Corridor is a major employment area for Bellevue, encompassing a 900-acre area that stretches between State Route SR 520 and Bel-Red Road. Dozens of aging warehouses, strip malls, and auto body shops dot the landscape. Historically, this district contained most of Bellevue's light industrial land. From 1995 to 2004, the number of people working in the corridor dropped 5%, while employment increased by 20% in Bellevue as a whole. Large employers such as Safeway moved its food

distribution warehouse to Auburn and a planned transit line with two stations is slated for the district. The decline in employment led the City of Bellevue to rezone the area to accommodate a mix of office, residential and retail uses. Over the next 15 years, the redevelopment along the corridor may bring as many as 13,000 office workers and up to 2,000 more residents living there.

RENTON LANDING
Formerly a 46-acre site on the south end of Lake Washington owned by the Boeing Company, The Landing is a new urban village with more than 600,000 square feet of national and local retail stores, restaurants, and entertainment, as well as an additional 880 units of residential housing. Puget Sound Energy, Paccar, and the Boeing Company previously owned the land for industrial uses such as coal briquette manufacturing and a now-defunct steam plant. In 2004, the Boeing Company sold 46 surplus acres for the first phase of The Landing. The Boeing Company's nearby workforce in Renton led to steady retail sales during the week, with weekends, evenings and happy hours bringing in different crowds from throughout the region.

Regional Economic Development Efforts for Industrial Lands

Several cities have integrated planning and economic development and focused on their industrial areas. Four examples include the Center for Advanced Manufacturing in Puget Sound (CAMPS) in Kent, City of Everett's Streamlined Permitting, Canyon Park in Bothell, and PSIC-Bremerton.

CENTER FOR ADVANCED MANUFACTURING PUGET SOUND
CAMPS is a resource center located in Kent that brings together manufacturers, supply chain partners, pre-qualified business development specialists, and strategic partners. It helps small- to mid-sized manufacturing businesses find innovative products and processes, better position their company in the supply chain process, access pre-qualified business development specialists, and find solutions to workforce and capital formation issues. It was created by the City of Kent and the Kent Chamber of Commerce in 2002 to maintain the vitality of the valley's manufacturing base. CAMPS is an innovative concept. As an organization focused on the manufacturing sector's unique needs and challenges, it ensures that the sector remains a competitive part of the region's economy.

CITY OF EVERETT'S STREAMLINED PERMITTING
In 1997 Everett adopted a Planned Action Ordinance for southwest Everett that expedited State Environmental Policy Act (SEPA) review for industrial land in the area. A Planned Action EIS is a form of

Environmental Impact Statement (EIS) authorized in 1995 by the Washington State Legislature to streamline the development process. It provides for early environmental review of potential development in a specified area, identifies mitigation measures upfront, and eliminates onerous environmental review requirements for proposed projects that fit the desired intent of the area.

Everett has since authorized over 5 million square feet of development using this expedited process. Expedited reviews have significantly reduced permitting time (to 3-4 weeks from 3-4 months) and uncertainty for developers.

CANYON PARK, BOTHELL

In 1984, Bothell's Canyon Park was a working dairy farm. Ten years later, the area was home to 86% of Snohomish County's 5,000 biotech workers, most of them in the 200-acre Canyon Park Business Center. While clusters of biotech and life science firms located in Redmond and Seattle, Canyon Park's sprawling, suburban character offered room for expansion at a low price relative to other areas. Philips, an anchor of the area, acquired many of the area's ultrasound manufacturing companies in 1998. Today, Philips employs 2,000 workers in the region and is a leader in ultrasound technology development and manufacturing. Despite extensive economic development efforts focusing on bringing biotech employment from Seattle, South Lake Union supplanted the park as a regional biotech hub, and Canyon Park has excess capacity and room for growth. In addition, the headquarters of Seattle Genetics is located here. The Boeing Company has also located temporary offices in a large portion of Canyon Park while its Everett site is reconfigured.

In 2012 the City of Bothell received a grant of $500,000 to fund a project for the Bothell Med Tech Manufacturing Innovation Partnership Zone. The first round of funding is being used to establish an incubator for startup medical tech firms in partnership with the University of Washington C4C, UW Bothell and Lake Washington Technical Institute programs. This is to be followed by the city and the Innovation Partnership Zone working together for a larger facility catering to the med tech industry through office, conference and hospitality services located in Canyon Park.

PUGET SOUND INDUSTRIAL CENTER-BREMERTON

PSIC-Bremerton, on the Kitsap Peninsula at the foot of the Olympic Peninsula, is the newest of eight designated MICs in the region. While the area comprises 3,700 acres of largely undeveloped land with good highway and rail access, it currently has the smallest amount of employment of any MIC (estimated at 876 jobs in 2010) and low demand hampers development despite studies into market feasibility and extensive eco-industrial marketing efforts.

Notable New Regional Efforts

Notable new regional efforts include support of the maritime sector. These are creation of a new "Maritime Federation" by the Seattle-King County Economic Development Council, as well as Governor Inslee's creation of the Governor's Maritime Sector Lead position.

A COMPARATIVE ANALYSIS OF PEER REGIONS

Chicago, Portland, OR, San Francisco, New York, Philadelphia, and Boston are often cited for their comprehensive and innovative approaches to industrial land regulation. Additionally, Vancouver, BC offers a neighboring region's perspective. Based on this, the following cities were selected for review:

- Chicago
- Portland, OR
- San Francisco
- New York
- Philadelphia
- Boston
- Vancouver, BC

Exhibit 2.1. Peer Regions Chosen for Review

Overall strategies employed by cities to regulate their industrial land include:

- Defining geographical areas within industrial-zoned land for increased protections for industrial uses.
- Improving existing zoning codes.
- Creating new zoning categories to reflect patterns of industrial use.
- Aligning recommendations for infrastructure with land policies.
- Providing tax incentives, assistance with workforce development, services for business retention to attract emerging new industrial businesses and assistance with site selection for businesses looking to expand or relocate.

While several of these strategies are replicable in the central Puget Sound region, their success in local jurisdictions depends on the individual jurisdiction's trends in employment, planning context and the appetite of its industrial property owners for change.

Chicago

Existing Regulatory Context

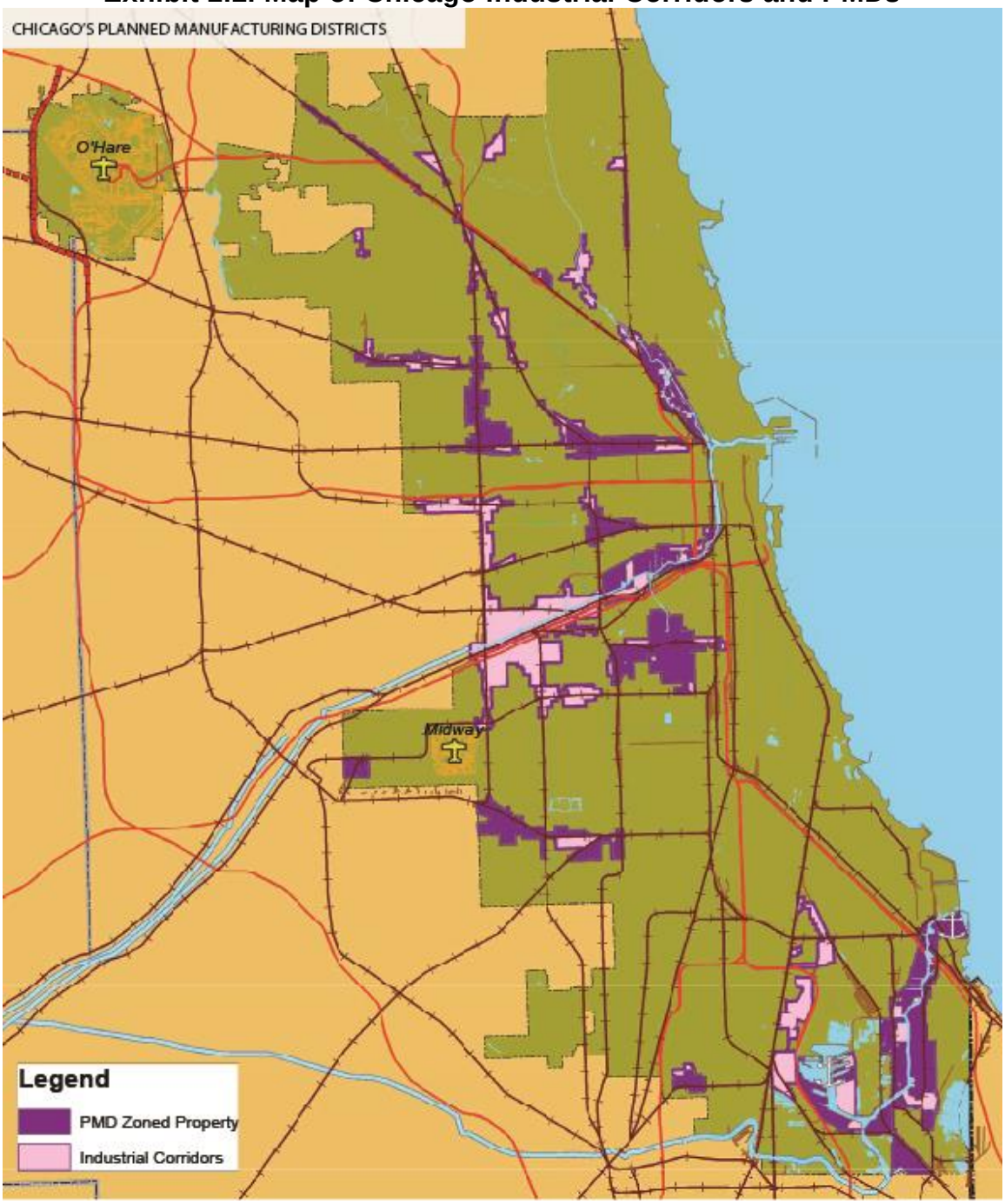
Since the 1940s, Chicago has implemented plans and policies to concentrate industrial activity in specific areas that are uniquely suited to manufacturing activities. Typically located along waterways and rail corridors, these areas were formalized as designated Industrial Corridors by the Chicago Plan Commission starting in 1992. Since then, proposed zoning changes for properties within corridor boundaries to a use other than manufacturing require Plan Commission review.[1] Today, Chicago's 26 designated Industrial Corridors comprise 16% of all land within the city and 66% of all the land that is zoned for manufacturing. Between 1988 and 2007, the city designated 14 smaller districts within 12 of these corridors called Planned Manufacturing Districts (PMDs). These districts are clusters of parcels amounting to at least five contiguous acres that operate under a single, regulatory regime. Once a PMD is designated, no zoning changes may occur and no land can be removed from it. The idea behind the PMD is to prevent piecemeal, parcel-by-parcel rezoning that may undermine the viability of the industrial district. PMDs are typically located in successful industrial corridors that face high conversion pressure from other uses.

Elected officials or property owners can propose PMDs which then go through an extensive review process to get designated. PMDs regulate uses more narrowly than larger industrial corridors. Each PMD has a specific list of permitted uses where existing non-conforming uses can convert only to a permitted use on this list. Changes from manufacturing to a different permitted use within PMDs are required to be reviewed by the Zoning Board of Appeals, elevating the decision to the city. In this way, PMDs function in a similar way to overlay districts, but tie the properties together.

The designation of PMDs in Chicago was a long, conflict-laden process.[2] Controversy regarding their effectiveness and calls for dismantling or adjusting boundaries for several of them continue. Nevertheless, there is some evidence that PMDs are successful at preventing encroachment. PMDs designated through broad-based community planning and participation from its property owners, such as Clybourne Corridor, are more stable over time since a plurality of property owners feel a sense of ownership around the initiative.

The PMD designation is a major innovation in Chicago's regulatory tools. PMDs address the complex agglomeration preferences and ecosystem dynamics of industrial uses and protect them from a slow, parcel-by-parcel erosion.

Exhibit 2.2. Map of Chicago Industrial Corridors and PMDs



Source: City of Chicago

Beyond Land Use Regulation: Promoting Industrial Entrepreneurship, Business Incubation and Workforce Development

In addition to zoning, Chicago uses Tax Increment Financing (TIF[3]) funds from designated districts in industrial areas to make infrastructure improvements, support existing businesses and attract new ones. The city also funds programs focused on workforce development and business retention, including the following two leading examples:

- **The Industrial Council of Nearwest Chicago.**[4] Established in 1967, this group provides area companies with free business development, advocacy and consulting services. It developed the Fulton-Carroll Business Incubator in 1980 to help fledgling manufacturing companies. It incubates a wide range of industrial businesses, from high-tech to wholesaling, and is careful to attract tenants that utilize its industrial-friendly features such as loading docks, bay doors, freight elevators and high ceilings.

- **Manufacturing Renaissance in Chicago.** This organization ensures local workers have access to high-quality training programs so that local industrial businesses have access to a long-term supply of skilled workers. The group builds relationships with local colleges to include relevant training programs, and augment their existing programs with national accreditations.

Portland, OR

Existing Regulatory Context[5]

Portland's Comprehensive Plan designates its industrial land as either Mixed Employment, Central Employment or Industrial Sanctuary. Four categories of base zones implement these designations:

1. General Employment Zones: General Employment 1 (EG1), General Employment 2 (EG2)
2. Central Employment Zones (EX)
3. General industrial Zones: General Industrial 1(IG1), General Industrial 2 (IG2)
4. Heavy Industrial (IH)

- **General Employment Zones (EG1 and EG2).** These zones implement the Mixed Employment map designation of Portland's Comprehensive Plan. These zones are intended to incorporate industrial and industrial-related activities as well as supportive commercial uses, capturing a broad range of services and employment uses. EG1 zones are typically found in mostly developed, urban areas with small blocks and lots while EG2 zones are typically found on larger blocks and lots in less urban contexts. Residential uses are allowed as a conditional use on both zoning designations.

- **Central Employment Zones (EX).** These zones implement the Central Employment map designation and are intended to allow industrial and commercial uses that need a central location. Residential and mixed-use are permitted outright in this zoning category.

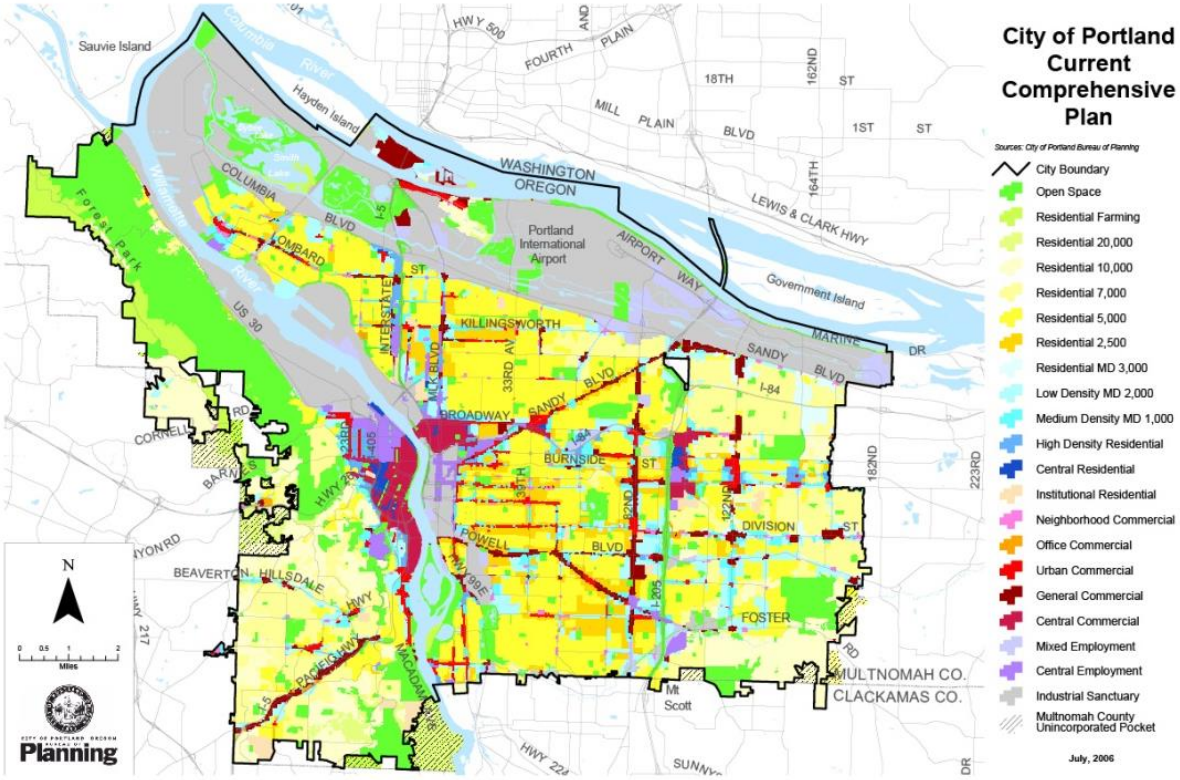
- **General Industrial Zones: General Industrial 1 (IG1), General Industrial 2 (IG2).** The two General Industrial zones and the Heavy Industrial zone implement the Industrial Sanctuary designation. General Industrial zones encompass areas where most industrial uses are likely to locate, while other uses are restricted to prevent potential conflicts and to preserve land for industry. IG1 zones are in more developed areas with a regular block pattern and small lots while IG2 zones are in less developed areas with irregular, large blocks and large lots. Residential uses are allowed as a conditional use on both these zoning designations.

- **Heavy Industrial (IH).** The Heavy Industrial zone encompasses locations for industries incompatible in other parts of the city. Development standards are the minimum necessary to assure safe, functional, efficient, and environmentally sound development.

Residential uses are allowed as a conditional use in this zoning designation.

Early recognition of the role of industrial land, its special needs and protection through the Industrial Sanctuary zone designation is a major innovation in Portland's regulatory tools.

Exhibit 2.3. Map of Portland Comprehensive Plan Designations



Source: City of Portland website, accessed November 2014

Beyond Land Use Regulation: Economic Development and Freight Planning and Investments

In addition to these regulations, the city adopted a Freight Master Plan in 2006 with a roadmap of infrastructure investments to improve freight mobility. Economic development planning around industrial land with the Working Harbor Reinvestment Strategy provides a 10-year plan of public investments by the city in industrial districts along the deep water shipping channel.

San Francisco

Existing Regulatory Context

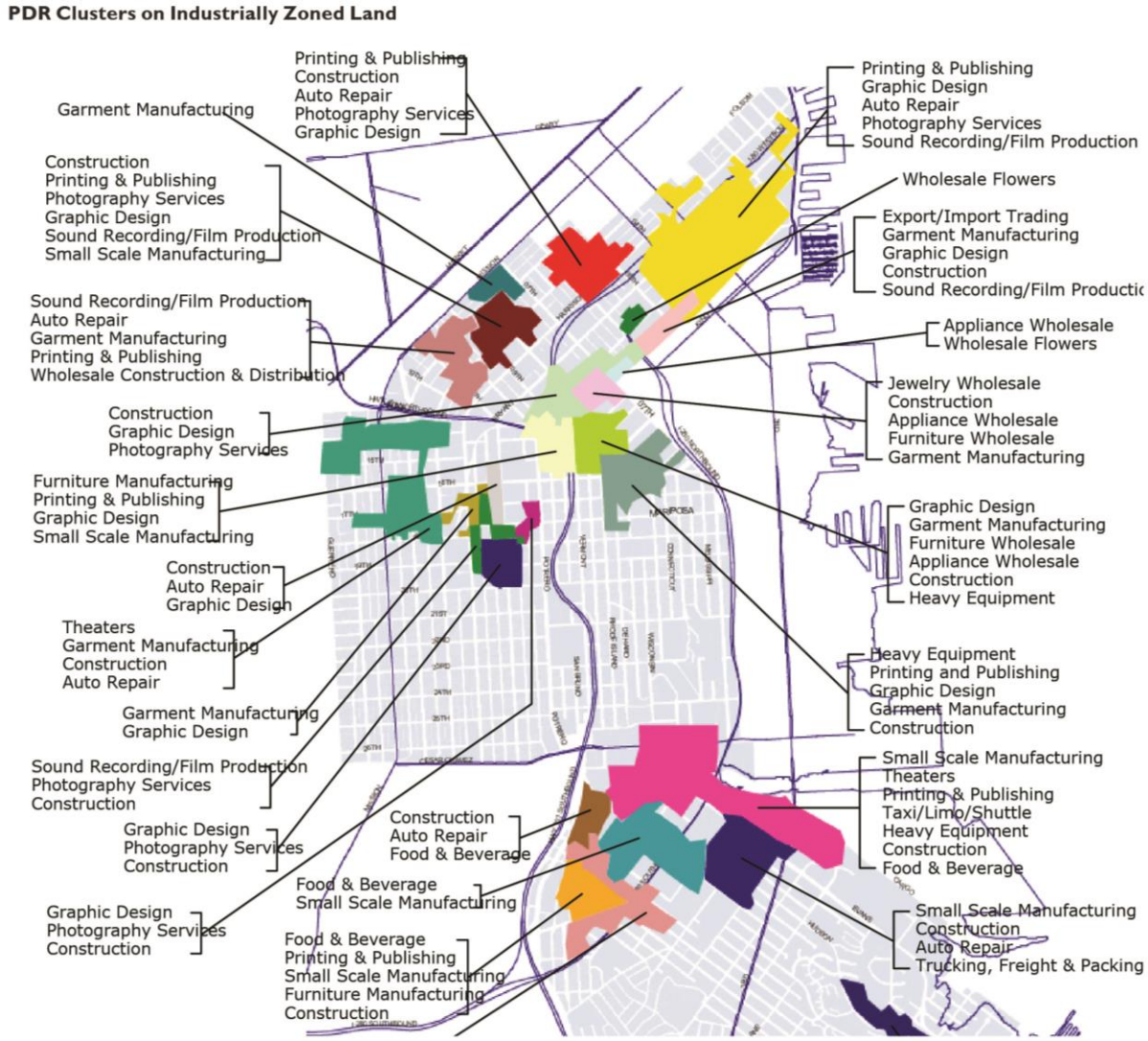
The planning context at the heart of San Francisco's regulatory tools is related to the management of industrial-zoned land in a dense, urban area where overall supply of land is limited, and demand for other uses, especially housing, is very high. In addition, the Port of San Francisco is gradually transitioning from an industrial past with a large portfolio of land and buildings on the waterfront to a smaller, more compact entity, making way for mixed-use and recreational uses along the water's edge. The types of industries attracted to San Francisco are increasingly niche manufacturing or services which are compatible with residential uses, reflecting the city's transition to a services and knowledge-based economy.

San Francisco regulates industrial land through two broad categories of districts: (1) Industrial, and (2) Production, Distribution and Repair (PDR) districts.

San Francisco's reconceptualization of light industrial uses as production, distribution and repair uses is a major innovation in its regulatory tools for industrial land.[6] This is intended to be both a substantive and a semantic distinction. It captures the current activities on the city's industrial land better and eliminates the association some may have of the word "industrial," provoking mental images of smokestacks and other markers of a bygone industrial past.

PDR land captures a wide range of uses, from auto-repair, printing and transportation to furniture manufacturing, food production, performance spaces and digital media. The goal is to recognize the hybrid as well as benign nature of many modern industrial uses. San Francisco's supply of industrial-zoned land is small and these innovations are designed to reduce further erosion of this land. Approximately 1,274 acres of land are protected for PDR uses in San Francisco.

Exhibit 2.4. PDR Clusters on Industrial Land in San Francisco



Source: City of San Francisco, accessed November, 2013

The city first developed the PDR zoning category in 1998 and refined the regulations in 2014. The 1998 zoning prohibited residential and office uses, and limited retail and institutional uses in both PDR-1-D and PDR-1-G zoning districts. Over the next six years, the industrial community conveyed that the regulations were too restrictive and the regulations discouraged production, distribution and repair development. In April 2014, San Francisco adopted a new set of regulations that recognized the complex economics of developing new PDR space and the need for non-residential space to subsidize the PDR space. This new legislation amended the planning code to allow office, retail and certain institutional uses to be combined with PDR uses in new mixed-use development projects. It encourages the development of small enterprise work spaces—a building that includes discreet work space units, commonly

referred to as business incubators—which are independently accessed from the building's common areas.

Subject to obtaining a conditional use authorization from the Planning Commission, applicants with parcels of 20,000 square feet or larger in PDR-1-D or PDR-1-G zoning districts north of 20th Street are permitted to construct new developments containing a minimum of one-third total gross floor area of PDR uses. The remaining two-thirds may be allocated to office use, retail uses, or institutional uses such as assembly, social services, education, religious facilities, residential care and job training centers. Each small enterprise counts as 0.5 square feet of PDR space and 0.5 square feet of non-PDR space. This allows up to 33% of new PDR space to be characterized as accessory retail use. To be eligible, the development site must be vacant or substantially underutilized. Small enterprise work spaces are limited to a maximum of 1,500 square feet each, instead of 100 square feet previously allowed.

The following sections describe industrial zones in San Francisco.

Industrial Districts

- **Light Industrial (M-1).** These districts provide land for smaller industries dependent upon truck transportation. Most industries are permitted, while the large or noxious ones are excluded. The permitted industries have restrictions regarding enclosure, screening and minimum distance from residential districts.

- **Heavy Industrial (M-2).** These districts are the least use-restricted and are at the eastern edge of the city, separated from residential and commercial areas. These are suitable for larger industries served by rail and water transportation and by large utility lines. Heavier industries are permitted, with fewer screening and enclosure requirements than M-1 Districts, but some uses are permitted only as a conditional use or at specific distance from residential districts. Permitted uses include manufacturing, wholesale, storage, retail, repair, and service uses. Auto-wreckers and certain other uses, including residential, are conditional, requiring authorization by the Planning Commission.

- **Heavy Commercial (C-M).** These districts provide a limited supply of land for certain heavy commercial uses not permitted in other commercial districts. While the emphasis is on wholesaling and business services, limited light manufacturing and processing are permitted. Standards are imposed on enclosure within buildings and screening of outdoor uses to prevent potential incompatibility of some of these uses and the proximity to residential and other commercial areas.

- **Service/Light Industrial (SLI).** These districts are designed to protect and facilitate the expansion of existing general commercial, manufacturing, home and business service, live/work use, arts uses, light industrial activities and small design professional office firms. Permitted uses include retail, general commercial, home, personal and business services, light industrial, institutional, cultural arts and artisan, live/work space, and parking. Existing group housing and dwelling units are protected from demolition or conversion to nonresidential use and development of new group housing and low-income affordable dwelling units are permitted as a conditional use. General office, hotels, movie theaters, nighttime entertainment and adult entertainment uses are not permitted.

- **Service/Light Industrial/Residential (SLR) Mixed-Use.** This district is designed to maintain and facilitate the growth and expansion of small-scale light industrial, home and business service, wholesale distribution, arts production and performance/exhibition activities, live/work use, general commercial and neighborhood-serving retail and personal service activities. It protects existing housing and encourages the development of housing and live/work space at a scale and density compatible with the existing neighborhood.

  Permitted uses include retail, general commercial, home, personal and business services, light industrial, institutional, cultural arts and artisan, live/work space, parking and residential activities. General office, hotels, nighttime entertainment, movie theaters, adult entertainment and heavy industrial uses are not permitted.

- **Service/Secondary Office (SSO).** This district is designed to accommodate small-scale light industrial, home and business service, arts activities, live/work uses, small-scale professional office space and large-floor-plate "back office" space for sales and clerical work forces. Nighttime entertainment is permitted as a conditional use. Demolition or conversion of existing group housing or dwelling units require conditional use authorization.

  Permitted uses include offices, retail, general commercial home, personal and business services, light industrial, institutional, cultural arts and artisan, live/work space, and parking. Residential activities and nighttime entertainment uses require conditional use approval.

Production, Distribution and Repair Districts (PDR)

- **PDR-1-B District: Light Industrial Buffer.** The intent of this district is to create a buffer area between residential

neighborhoods and light industrial areas, primarily in the Bayview Hunters Point neighborhood. Thus, this district prohibits residential uses and limits office, retail, and institutional uses. Generally, all other uses are permitted. This zone allows for less intensive production, distribution, and repair activities that will not compromise the quality of life of nearby residents. These uses generate less external noise, odors, and vibrations and engage in fewer trucking activities than those permitted in PDR-2 districts, discussed on the following page. Uses in this district are generally conducted completely within enclosed structures. Small-scale retail and office uses are permitted, as are other activities that may serve to buffer existing residential neighborhoods from areas of concentrated industrial operations

- **PDR-1-D District: Design.** The intent of this district is to retain and encourage less-intensive production, distribution, and repair businesses, especially the existing clusters of design-related businesses. As such, this district prohibits residential uses and office, and limits retail and institutional uses. Additionally, this district prohibits heavy industrial uses, which generate external noise, odors, and vibrations and engage in frequent trucking activities. Generally, all other uses are permitted.

- **PDR-1-G District: General.** The intent of this district is to retain and encourage existing production, distribution, and repair activities and promote new business formation. Thus, this district prohibits residential and office uses and limits retail and institutional uses. Additionally, this district allows for more intensive production, distribution, and repair activities than PDR-1-B and PDR-1-D but less intensive than PDR-2. Generally, all other uses are permitted.

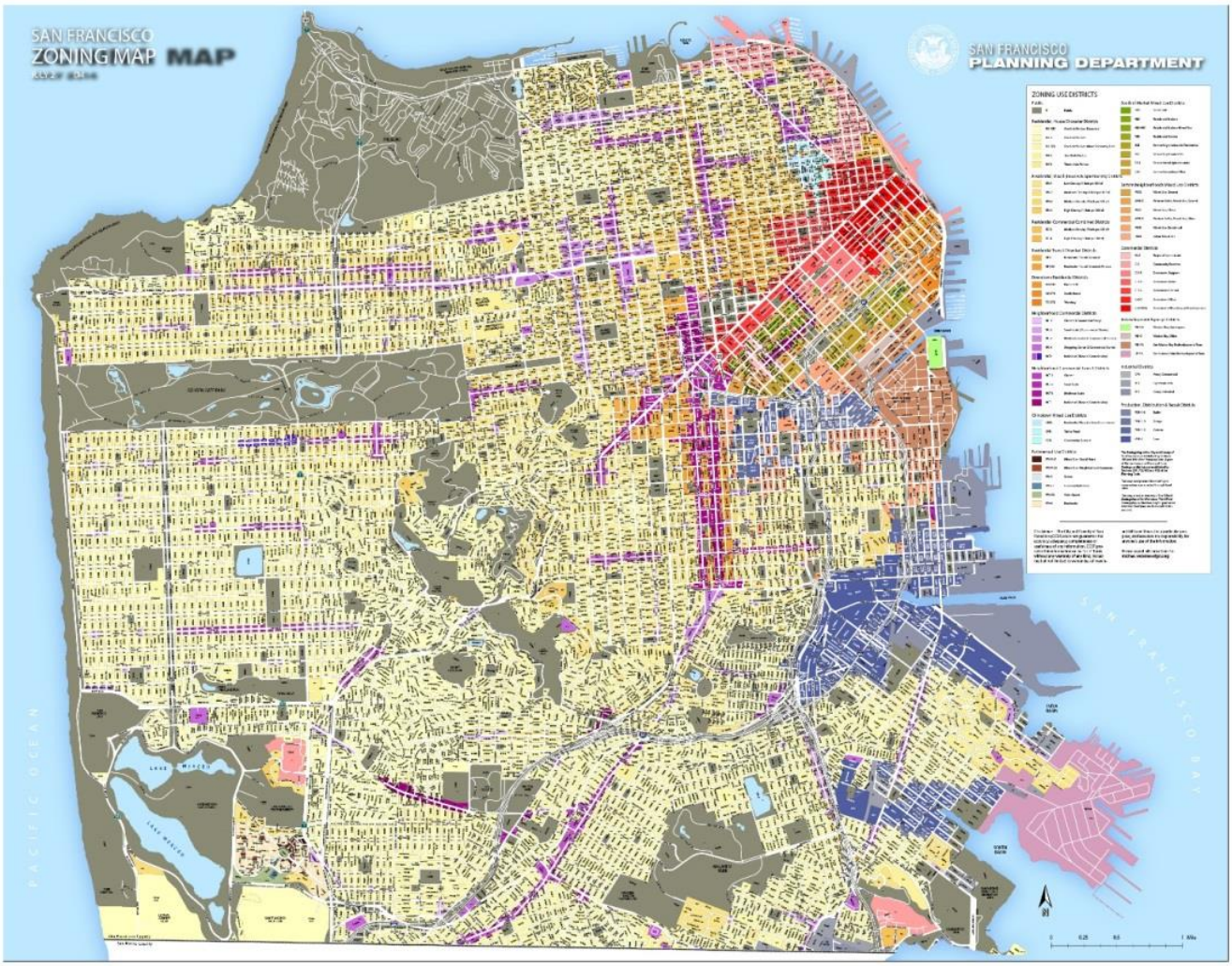
- **PDR-2 District: Core Production, Distribution, and Repair.** The intent of this district is to encourage the introduction, intensification, and protection of a wide range of light and contemporary industrial activities. This district prohibits new housing, large office developments, large-scale retail and the heaviest of industrial uses, such as incinerators. Generally, all other uses are permitted.

  The conservation of existing flexible industrial buildings is also encouraged. These districts permit certain non-industrial, non-residential uses, including small-scale retail and office, entertainment, certain institutions, and similar uses that would not create conflicts with the primary industrial uses or are compatible with the operational characteristics of businesses in the area.

Light industrial uses in these districts can operate fully or partially enclosed, or in open areas. These uses may require trucking activity, including trucks with up to 18 wheels or more occurring at any time of the day or night. PDR activities in these areas may emit noises, vibrations, odors, and other emissions, as permitted by law.

Chemical, biological, and other hazardous, explosive, or flammable materials may be stored on site within the requirements of local, state, and federal health and safety regulations, and within the stipulation of this code. Additional use size maximums and minimum distance requirements on certain activities, raw materials used for production, manufacturing, repair, storage, research, and distribution could be imposed.

Exhibit 2.5. Zoning Map of San Francisco



Source: City of San Francisco website, accessed November 2014

Beyond Land Use Regulation: Advocacy, Marketing, and Branding Assistance

SF Made is a local organization that provides assistance with industrial retention and expansion, as well as advocacy, marketing and branding. The group engages directly with entrepreneurs and growing small companies that manufacture within San Francisco, offering industry-specific education, networking opportunities, as well as connections to local resources. SF Made focuses on developing an urban model for manufacturing incubation that other major U.S. cities can use to catalyze their own local manufacturing sectors.

New York

Existing Regulatory Context

New York regulates its industrial land through a base Manufacturing (M) district further divided into a range of lower, medium and higher density districts. Based on this structure, the broad manufacturing zoning district is divided into the M1, M2 and M3 districts.

New York's manufacturing zoning district encompasses a range of industrial and manufacturing activities ranging from catering suppliers, lighting fabricators and warehouse and distribution centers to film production studios, ferry and ship terminals and essential municipal facilities. In addition to these traditional and emerging industrial uses, manufacturing districts permit many commercial uses and, with limitations, some community facility uses.

Industrial uses are permitted in all of the three manufacturing districts, M1, M2 and M3, according to the characteristics of their operations. Each of the three districts incorporate differing performance standards that limit the amount and type of industrial nuisances permitted. Light manufacturing uses are permitted in all manufacturing districts. In general, more potentially noxious uses are limited to M3 districts, but may also locate in M1 and M2 districts if they comply with the higher performance standards of those districts. All industrial uses must also comply with applicable city, state and federal environmental regulations.

With some exceptions, commercial uses, including hotels and business, professional and government offices, are permitted in manufacturing districts. However, many retail and service uses, as well as hotels and motels, are prohibited in M2 and M3 districts. Community facilities are excluded entirely from M2 and M3 districts and restricted to a few uses in M1 districts. Certain community facilities, such as schools, are allowed in M1 districts only by special permit.

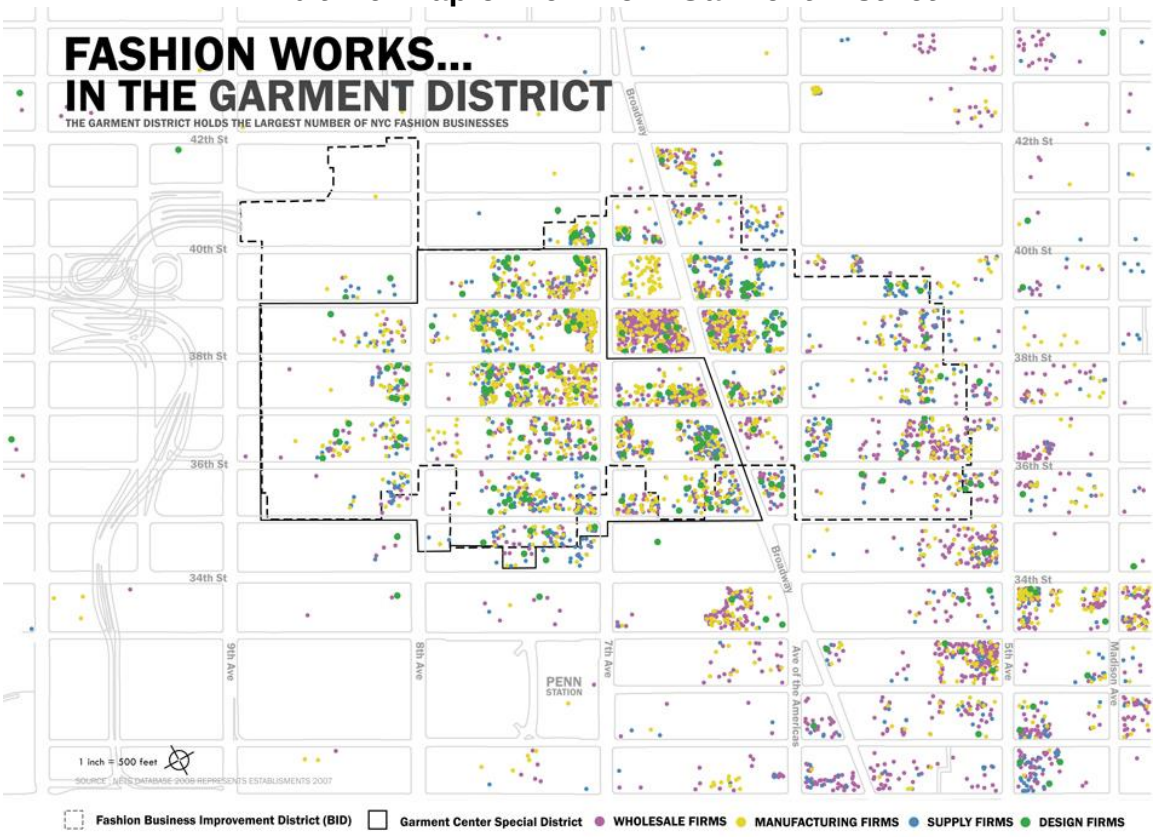
Today, new residential developments and conversions are permitted in selected M1 districts that have a significant number of existing residences. Paired districts, mapped in Mixed-Use districts (MX) and the Special Long Island City Mixed-Use district, combine an M1 district with a residential district, allowing a fine-tuned mixture of appropriate uses. Other older industrial areas, like Soho and Noho in Manhattan, have changed significantly as obsolete industrial buildings are converted to residential use by special permit. New residences are prohibited in all M2 and M3 districts.

Beyond Land Use Regulation: Business Assistance and Marketing

The New York Industrial Retention Network (NYIRN). A division of the Pratt Institute's Center for Community Development, this group provides several services for industrial businesses to remain and grow in NYC. These include assistance with employee hiring and training and with advocacy and marketing through the Made in NYC program. Importantly, the organization offers assistance to industrial firms with grants and incentive programs offered by the city, especially with regard to site selection for expansion or relocation.

The Garment District. The treatment of New York's Garment District is a major innovation in New York's regulatory tools. This special purpose district was created in 1987 to retain and preserve production and showroom uses in selected blocks between 35th and 40th Streets, and Broadway and 9th Avenue, in Midtown Manhattan. The midblock portions of this district are designated manufacturing preservation areas (P1), where residential uses and hotels are not allowed as-of-right and the conversion of manufacturing space is restricted, requiring a certification from the City Planning Commission (CPC) that an equal amount of floor area has been preserved for specified industrial uses. In 2005, a new preservation area (P2) was created in the midblock between 8th and 9th Avenues as a part of a broader Hudson Yards rezoning. As part of this rezoning, new residential and commercial space is permitted on lots with less than 70,000 square feet of floor area. The conversion of larger buildings to residential, hotel, or office use is permitted by authorization of the CPC.

Exhibit 2.6. Map of New York Garment District



Source: Sarah Williams, Spatial Information Design Lab, accessed November 2014

Philadelphia

Existing Regulatory Context

Though similar to other cities in the Puget Sound region with a port and a relatively large industrial sector, Philadelphia faces several challenges unique to its economy and geography. This includes a forecast reduction in industrial jobs, greater distance from China, a shallower river port and the absence of large anchor industrial users on the level of the Boeing Company.

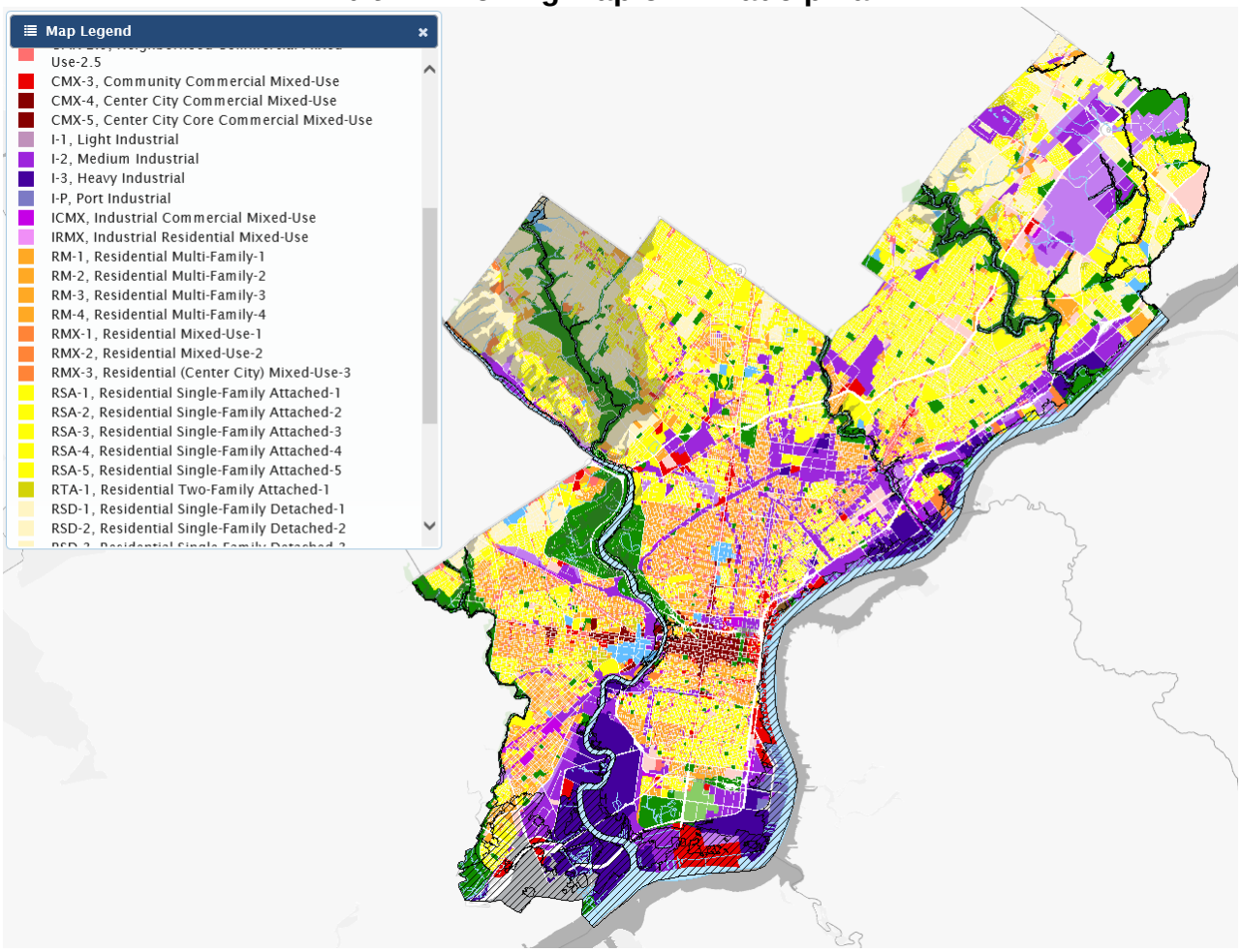
Philadelphia uses three categories of zoning districts to regulate its industrial land:

- **Industrial Residential Mixed-Use (IRMX).** These districts include a mix of very low-impact industrial uses, including artists and artisan industrial and residential and neighborhood-oriented commercial uses.

- **Industrial Commercial Mixed-Use (ICMX).** These districts are a buffer between industrial districts and commercial and residential districts.

- **Light Industrial (I-1), Medium Industrial (I-2) Heavy Industrial (I-3) and Port Industrial (IP).** The scale between light and heavy industrial districts takes into account noise, odor, vibration and other activities that impact the surrounding neighborhoods. The intensity of allowed industrial uses increases from low intensity in the I-1 district, to medium intensity in the I-2 district, and to high intensity in the I-3 district. Port Industrial or I-P is intended to accommodate marine-related industrial uses such as docks, wharves, piers, and related cargo facilities. All industrial uses require lot setbacks if they are located next to residential areas.

Exhibit 2.7. Zoning Map of Philadelphia



Source: City of Philadelphia website, accessed November 2014

Beyond Land Use Regulation: Industrial and Workforce Development Corporations, Marketing, and Incentives

Philadelphia Industrial Development Corporation is Philadelphia's public-private economic development corporation. It supports investment, business growth and developments across the city. It uses flexible financing products and a portfolio of industrial and commercial real estate to foster growth in the city.

In addition, PHL Made is an organization that supports industrial businesses with marketing and branding. NextFab Studio is a makerspace that fosters entrepreneurship and provides spaces, facilities with 3-D printers as well as outreach and marketing services.

The city also offers numerous non-regulatory, incentive-based programs aimed at retaining industrial businesses:

- **Job Creation Tax Credit.** May be applied against the city's Business Income and Receipts Tax liability. Eligible businesses are allowed to claim $5,000 or 2% of the annual wages paid, whichever is higher, for each qualified new full-time job created in the City of Philadelphia.

- **Real Estate Tax Abatement**. The City of Philadelphia offers a 10-year abatement of real estate taxes on qualifying rehabilitation or construction to encourage urban development and improvements to certain deteriorated industrial and commercial properties.

- **Urban Industry Initiative.** Created by a grant from Pew Charitable Trusts to find a successful approach to keeping urban manufacturing companies from leaving the City of Philadelphia. The Urban Industry Initiative developed a unified, innovative economic development and business retention strategy. This includes outreach and comprehensive business assistance to manufacturers in the lower northeast and lower northwest sections of the city (425 manufacturing businesses representing over 22,000 jobs), as well as a wide range of business concerns. UII targets specific neighborhoods for a broad set of business assistance resources, builds connections among companies and addresses business development deterrents such as crime, trash, and graffiti.

- **The Philadelphia Workforce Development Corporation.** This private nonprofit organization offers comprehensive employment and training programs. The corporation provides companies with recruitment and referral services as well as customized and on-the-job training for new employees at no cost to the employer.

- **Philadelphia Industrial Development Corporation.** This organization provides an array of services to help local businesses become more profitable, provide goods and services, and generate jobs to sustain Philadelphia's economic foundation. This includes a range of financial and managerial services, including direct loans to small businesses and minority contractors.

Philadelphia's redevelopment of its historic Navy Yard is a great example of a targeted area strategy. The City of Philadelphia became the owner of the 1,200-acre Navy Yard in 2000. The Philadelphia Industrial Development Corporation—a quasi-public agency tasked with economic development in Philadelphia—manages the planning, development and operations of this significant addition to the city's land supply.[7] A comprehensive master plan was developed in 2004 to convert the former military shipyard to a vibrant, mixed-use industrial and business campus. While the Navy still maintains a small presence, the Navy Yard now employs over 11,000 employees at 143 companies in the office, industrial/manufacturing, and research and development sectors. In

addition, the Yard was chosen for one of the U.S. Department of Energy's five nationwide Innovation Hubs. The Energy Efficient Buildings Hub is being developed in partnership with federal, state and local agencies and universities with the dual mission of reducing regional energy use in existing commercial buildings by 20% by 2020 with cost-effective solutions, and promoting regional economic growth and job creation.

Boston

Existing Regulatory Context

Boston's zoning establishes five types of base industrial districts:

1. Light Manufacturing (LM)
2. Restricted Manufacturing (M)
3. General (I)
4. Maritime Economy Reserve (MER)
5. Waterfront (W)

Of these, MER and W districts are specifically established for water-dependent and water-related industrial uses. Single-family residential land uses are prohibited in all the industrial districts. Multi-family uses are conditional in the M and W districts. Light Manufacturing (LM) is regulated separately and has a specific list of allowed, conditional and prohibited uses.

In addition to the base zoning district, neighborhood districts add a layer of regulations, typically further restricting uses and the sizes of structures A third layer of regulation, the special purpose overlay district, encompasses specific contiguous groups of properties. Base zoning regulations apply in addition to those carried by the overlay district.

Boston's zoning regulations are similar to other cities' zoning in terms of allowed, prohibited, and conditional uses in industrial areas. Boston does not allow residential uses, but does allow some retail and office uses. In general, Boston's code is complex as it encompasses three layers of regulatory oversight—base zoning, overlay districts, and neighborhood districts—all of which carry varying regulations. Boston's treatment of waterfront businesses is unique in that it applies specific regulations for waterfront uses by establishing special base zones for waterfront industrial areas through its W and MER zoning districts.

Beyond Land Use Regulation: Business Loans, Industrial Bonds, and Economic Development Plans

In addition to the zoning code, the city administers several incentive-based programs. These programs are coordinated and run by the Boston Local Development Corporation, a private non-profit corporation administered by the City of Boston. Its programs include:

- Loans for existing or potential industrial businesses to acquire new business property and purchase equipment and machinery to expand or use as seed money.
- The Back Streets Back-up Loan Program supports businesses through real estate assistance, workforce training, business assistance and

resources and partnerships.

- Tax-exempt industrial development bonds are issued to acquire land and construct new facilities, expand/renovate existing facilities or purchase new equipment. Projects eligible for tax-exempt financing are manufacturing facilities that create tangible products, cogeneration or small power facilities for furnishing local energy or gas, and solid waste/resource recovery facilities. These projects often have a strong job creation/retention component.

- Tax-exempt enterprise zone facility bonds for qualified businesses to finance the cost of commercial, retail or similar facility used by the borrower. The borrower must operate within an enterprise zone and 95% of the proceeds from the bond issue must be used to finance qualified zone property.

Each of the city's industrial zones have distinct economic development plans to identify land use, circulation, business and workforce services, image development and infrastructure improvements.

Vancouver, BC

Existing Regulatory Context

Vancouver's regional growth strategy establishes two land use designations that apply to industrial lands. These are Industrial and Mixed Employment. The Industrial designation is intended for industrial activities as well as related but limited accessory uses, such as office and retail. Residential uses are not included in this designation. The Mixed Employment designation, as its name suggests, is intended for industrial uses as well as wider variety of office and retail uses. Residential uses are not intended in this designation.

The City of Vancouver[8] implements these regional designations through two types of industrial districts encompassing 12 zoning designations:

1. Industrial Districts
2. Light Industrial Districts

Industrial Districts

- **MC-1, MC-2.** These are mixed-use districts that allow industrial, commercial and residential uses which are compatible with one another and with nearby residential districts. MC-2 limits residential uses in areas adjacent to heavy industrial zones.

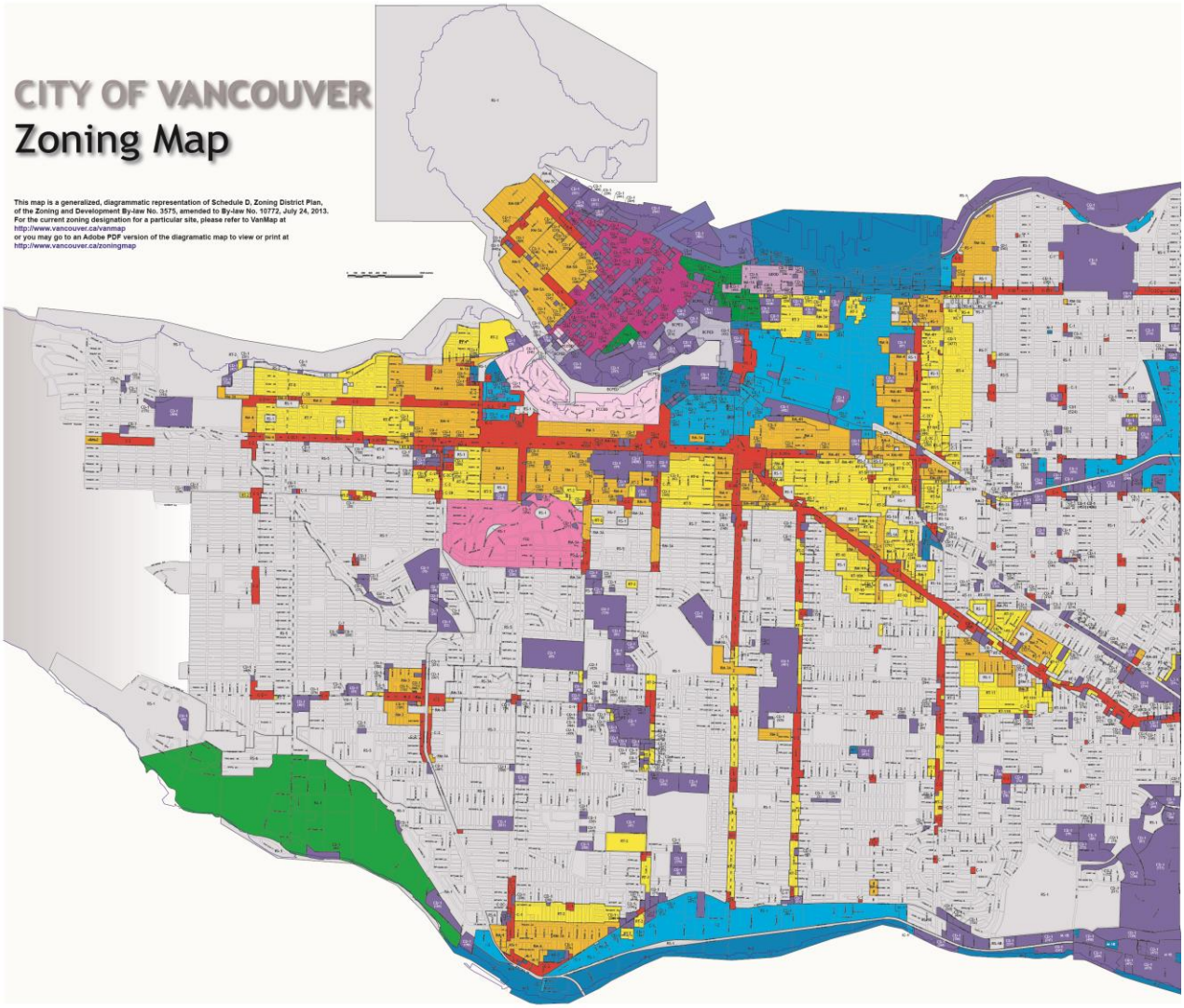
- **M-1, M-1A, M-1B, M-2 and M-2.** These zones permit industrial and other uses that are generally incompatible with residential land use, but are beneficial because they provide employment opportunities or serve a necessary function in the city. It does not permit potentially dangerous or environmentally incompatible uses when situated near residential districts. The M-1A district places emphasis on compatibility with adjacent residential districts while M-1B restricts the types and scale of non-industrial uses.

Light Industrial Districts

IC-1, IC-2, I-1, I-2 and I-3. These zoning categories permit light industrial uses that are generally compatible with one another and with adjoining residential or commercial districts. They also permit advanced technology industry, industry with a significant amount of research and development activity and commercial uses compatible with and complementing light industrial uses. The I-1 and I-3 zoning designations specifically permit advanced technology industry, and industry with a significant amount of research and development activity. The I-1 district does not permit office or retail uses. The IC-2 and IC-3 districts include additional design regulations such as compatibility with the function and character of adjacent streets or other landmarks.

The City of Vancouver owns approximately 1,577 acres of industrial-zoned land, a small share (about 5.6%) of the approximately 28,246 total industrial-zoned acres in the region. For a scale comparison, the Ballard-Interbay subarea is close to this size. Vancouver's industrial zoning allows a broad mix of uses within its districts.

Exhibit 2.8. Zoning Map of Vancouver, BC



Source: City of Vancouver website, accessed November 2014

IN REVIEW

Industrial lands play a vital role in many of the central Puget Sound region's economic clusters, with specific trends and issues having real consequences in shaping the use and management of these lands. Recent trends include a resurgence of manufacturing jobs and new processes and technological advances requiring a more educated workforce.

Regionally, incursion of non-industrial land uses into industrial areas or conversion of land use directly affects supply and demand for industrial lands and, in most cases, these impacts are difficult or nearly impossible to isolate or quantify.

Peer cities offer policy ideas for improving, cultivating and promoting industrial lands. Findings range from designating special tax districts, adopting plans for infrastructure investments or providing organizations that assist industrial-based companies with advocacy, grants, education, incentives, marketing and branding. Examples from peer cities show innovative solutions to complexities of their industrial lands developed at the *citywide* scale. The central Puget Sound region includes 82 different cities with individual governing bodies, zoning codes and city visions. This diversity of jurisdictions makes developing a *regional* strategy more challenging.

Endnotes

[1] Chicago Sustainable Industries (CSI)." City of Chicago . N.p., n.d. Web. 07 Nov. 2014.

[2] Rast, Joel. "Policy Research Report Abstract." UW-Milwaukee: Center for Economic Development. UW-Milwaukee: Center for Economic Development, 1 Apr. 2008. Web. 30 Oct. 2014.

[3] 'Tax Increment Financing is a special funding tool used by the City of Chicago to promote public and private investment across the city. Funds are used to build and repair roads and infrastructure, clean polluted land and put vacant properties back to productive use, usually in conjunction with private development projects. Funds are generated by growth in the Equalized Assessed Valuation (EAV) of properties within a designated district over a period of 23 years. Funding levels for specific projects are coordinated with area plans and goals. When an area is declared a TIF district, the amount of property tax the area generates is set as a base EAV amount. As property values increase, all property tax growth above that amount can be used to fund redevelopment projects within the district. The increase, or increment, can be used to pay back bonds issued to pay upfront costs, or can be used on a pay-as-you-go basis for individual projects. At the conclusion of the 23-year period, the increase in revenue over the base amount is distributed annually among the seven taxing bodies in the city that are based on property values.' "Tax Increment Financing Program." City of Chicago. N.p., n.d. Web. 29 Oct. 2014.

[4] Sustainable Urban Industrial Development (PAS 577). 2014. APA Planning Advisory Service. Nancey Green Leigh, FAICP, Nathanael Z. Hoelzel, Benjamin R. Kraft, C. Scott Dempwolf.

[5] City of Portland. 1999. Regional Industrial Lands Study for Portland and Vancouver Metropolitan Area. Prepared by Otak, Inc. Portland, OR. http://www.metroregion.org/library_docs/maps_data/regionalindustriallandstudy.pdf.

City of Portland. 2006. Freight Master Plan. Prepared by the City of Portland Office of Transportation.

City of Portland. 2007. Working Harbor Reinvestment Strategy. City of Portland Bureau of Planning. Portland, OR. http://www.portlandonline.com/planning/index.cfm?c=ecfji.

[6] City of San Francisco. 2002. Industrial Land in San Francisco: Understanding Production, Distribution, and Repair. July 2002. Prepared by San Francisco Planning Department, San Francisco, CA. http://www.ci.sf.ca.us/site/uploadedfiles/planning/neighborhoodplans/pdf/cw_dpr_chapter5_2.pdf.

[7] Philadelphia industrial Market and Land Use Strategy, Philadelphia Industrial Development Corporation, 2010.

[8] City of Vancouver. 1995. Industrial Lands Strategy. Prepared by City of Vancouver Planning Department. Vancouver, BC.